Vol. 924 Number 5

OFFICIAL GAZETTE

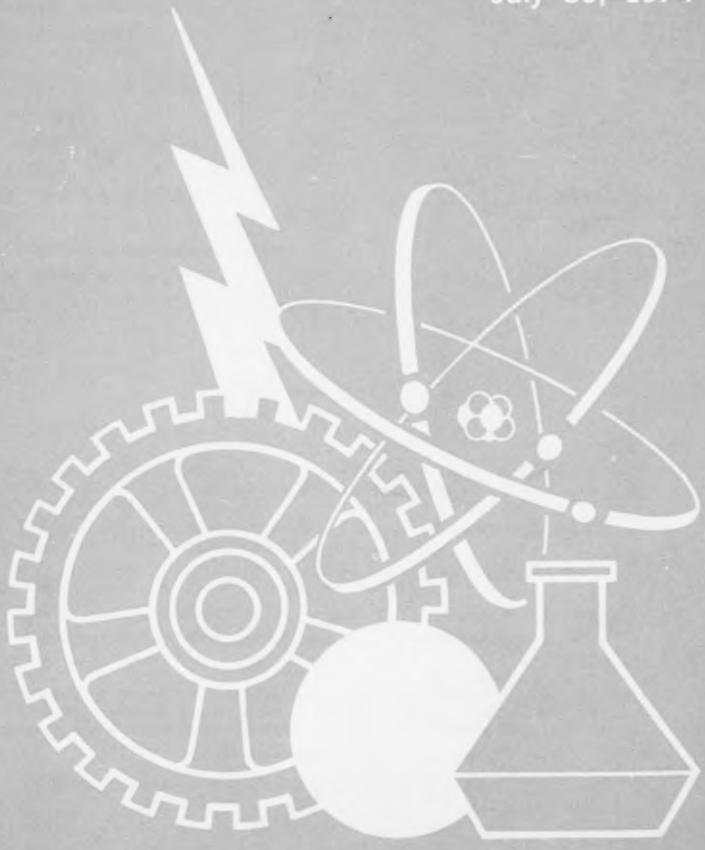
SPT

of the
UNITED STATES PATENT OFFICE

A UNITED STATES DEPARTMENT OF COMMERCE PUBLICATION

PATENTS

July 30, 1974



U. S. DEPARTMENT OF COMMERCE
Patent Office

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT OFFICE
July 30, 1974 Volume 924 Number 5

CONTENTS

	Page
Patents and Trademark Notices	
Use of Metric System of Measurements in Patent Applications	1104
Registration To Practice	1104
Patent Suits	1104
Patent Notices:	
Certificates of Correction for the Week of July 30, 1974	1106
National Technical Information Service	1106
Condition of Patent Applications	1107
Reissue Patents Granted (28,084)	1108
Patents Granted:	
General and Mechanical (3,825,952)	1112
Chemical (3,826,608)	1281
Electrical (3,826,858)	1328
Design Patents Granted (232,200)	1388
Index of Patentees	PI 1
Indices of Reissues and Designs	PI 33
Classification of	
Patents (Including Reissues)	PI 35
Designs	PI 37
Geographical Index of Residence of Inventors	
Patents (Including Reissues)	PI 38
Designs	PI 39

The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENTS SECTION), issued weekly, subscription $211.00 per annum, foreign mailing $52.75 additional; single copies $4.10 each.

THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly, subscription $60.25 per annum, foreign mailing $15.10 additional; single copies $1.25 each.

CIRCULARS OF GENERAL INFORMATION concerning PATENTS, price 60 cents each.

CIRCULARS OF GENERAL INFORMATION concerning TRADEMARKS, price 50 cents each.

PRINTED COPIES OF PATENTS are furnished by the Patent Office at 50 cents each; PLANT PATENTS in color, $1.00 each; copies of TRADEMARKS and DESIGN PATENTS at 20 cents each. Address orders to the Commissioner of Patents, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.O.

PATENT OFFICE NOTICES

Use of Metric System of Measurements in Patent Applications

In order to minimize the necessity in the future for converting dimensions given in the English system of measurements to the metric system of measurements when using printed patents as research prior art search documents, all patent applications are strongly encouraged to use *either* (1) only metric (S.I.) units, or (2) English units together with their metric system equivalents, when describing their inventions in the specifications of patent applications. This practice, however, is not being made mandatory at this time.

The initials S.I. stand for "Systeme International d'Unites," the French name for the International System of Units, a modernized metric system adopted in 1960 by the International General Conference of Weights and Measures based on precise unit measurements made possible by modern technology.

This request is made as part of the long-range program for conversion to metric units currently being conducted by the Federal Government.

Publications dealing with the metric system are available from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402 and the American National Standards Institute, 1430 Broadway, New York, N.Y. 10018.

C. MARSHALL DANN,
July 1, 1974. *Commissioner of Patents.*

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents on or before August 19, 1974.

Bizot, Hyland A., 2702 Harmon Road, Silver Spring, Md. 20902

Franchini, Paolo, Montedison S.p.A., Pat. & Licensing Dept., Largo Donegani 1–2, Milan, Italy 20121

Gellner, Michael Law, Ampex Corp., Patent Dept., 401 Broadway, Redwood City, Calif. 94063

Mannix, John G., Army Corp of Engineers, Office Chief of Engineering, 1000 Independence Ave. SW., Washington, D.C. 20314

Pasqualetti, Andriano, Montedison S.p.A., Pat. & Licensing Dept., Largo Donegani, 1–2, Milan, Italy 20121

Schenck, Paul F., 1934 Miramonte Ave., Mountain View, Calif. 94040.

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Patent Suits

Notices under 35 U.S.C. 290; Patent Act of 1952

2,441,960, P. Eisler, MANUFACTURE OF ELECTRIC CIRCUIT COMPONENTS; **2,587,568,** same; **2,706,697,** same; **Re. 24,165,** same, **filed** Oct. 31, 1962, D.C. Del. (Wilmington), Doc. 2519, *Technograph Printed Circuits, Ltd. et al.* v. *Radio Corporation of America.* Action dismissed with prejudice, Dec. 4, 1973.

2,524,149, R. E. Vanderhide, AUTOMATIC DRILLING MACHINE, **filed** Oct. 2, 1973, D.C., N.D. Ohio (Cleveland), Doc. C–73–1025, *Robert E. Vanderhide* v. *Brown & Sharpe Manufacturing Co., Inc.* Memorandum and order, summary judgment is entered in favor of defendant, dismissing plaintiff's complaint, Jan. 22, 1974.

2,587,568. (See 2,441,960.)

2,706,697, P. Eisler, MANUFACTURE OF ELECTRIC CIRCUIT COMPONENTS; **Re. 24,165,** same, **filed** Jan. 21, 1963, D.C. Del. (Wilmington), Doc. 2553, *Technograph Printed Circuits, Ltd. and Technograph Printed Electronics, Incorporated* v. *The Magnavox Company.* Parties agreed that action be dismissed with prejudice, Dec. 10, 1973.

2,706,697. (See 2,441,960.)

2,733,713, H. H. Kabnick, ORAL IRRIGATOR, **filed** in the Court of Claims (District of Columbia), Doc. 55–73, *Interdent Corporation* v. *The United States.* Defendant's motion for partial summary judgment is granted to extent plaintiff seeks recovery for infringement under 28 U.S.C. 1498 for use or sale of Defense Department Post Exchanges which are non-appropriated fund activities, Dec. 19, 1973.

2,790,362, Higonnet and Moyroud, PHOTO COMPOSING MACHINE; **3,332,617,** same, TYPE COMPOSING APPARATUS, **filed** Sept. 16, 1970, D.C., N.D. Ill. (Chicago), Doc. 70c2278, *Photon, Inc.* v. *Compugraphic Corp. and Ottawa Publishing Co.* Enter order for entry of consent decree and order for injunction pursuant to agreement of all parties, Sept. 13, 1971.

2,835,247, L. M. Stabholc, LUMBAR TRACTION APPARATUS, **filed** Jan. 25, 1974, D.C., E.D.N.Y. (Brooklyn), Doc. 74C131, *Dr. Ludwik M. Stabholc* v. *Lawrence H. Fischer.*

2,843,075, R. M. Geraghty, ALARM DEVICE, **filed** Jan. 11, 1974, D.C., N.D. Ill. (Chicago), Doc. 74c104, *E. D. Bullard Company* v. *Trippe Manufacturing Company.*

2,906,875, E. T. Molinaro, STATION SAMPLING RADIO, **filed** Dec. 20, 1973, D.C. Del. (Wilmington), Doc. 4780, *Anthony P. Catanzaro* v. *International Telephone & Telegraph et al.*

2,984,416, N. B. Johnson, HOT AIR HEATING METHODS, **filed** Oct. 19, 1973, D.C. Minn. (St. Paul), Doc. 3–73–313–C, *Rheem Manufacturing Company* v. *Johnson Heater Corporation.* Memorandum and order granting defendant's motion for dismissal on grounds of lack of jurisdiction over defendant and that venue is improperly laid in this judicial district, Jan. 24, 1974.

3,142,300, O. Erteszek, ELASTICIZED PANTY GIRDLE; **3,142,301,** same, ELASTICIZED PANTY GARMENT, **filed** Oct. 27, 1967, D.C., S.D.N.Y., Doc. 67–C–4181, *Vanity Fair Mills Inc.* v. *Olga Company (Inc.).* Complaint for a declaratory judgment is dismissed, defendant's counterclaim is sustained, judgment consented and entered, Jan. 24, 1974.

3,142,301. (See 3,142,300.)

3,253,103, A. J. Fister, PROTECTORS FOR ELECTRIC CIRCUITS; **3,267,240,** T. E. L. Fitzgerald, same, **filed** Dec. 17, 1973, D.C., N.D. Ill. (Chicago), Doc. 73c3179, *McGraw-Edison Company* v. *Federal Pacific Electric Company.*

3,257,253, E. R. Hoyt, LAMINATED CELLULAR PANEL; **3,413,177,** same, APPARATUS FOR MAKING LAMINATED CELLULAR PANEL, **filed** Dec. 14, 1973, D.C. Mass. (Boston), Doc. CA 73–4203–F, *Hexcel Corporation* v. *Rice Barton Corporation.*

3,267,240. (See 3,253,103.)

3,332,617. (See 2,790,362.)

3,346,052, Moore and Davidson, FOLDING BOOM AERIAL WATER DELIVERY APPARATUS FOR MOBILE FIRE FIGHTING EQUIPMENT; **3,599,722,** Davidson and Morris, REMOTELY CONTROLLABLE FIRE FIGHTING APPARATUS; **3,675,721,** Same, FIRE FIGHTING APPARATUS WITH TELESCOPING BOOM, **filed** Dec. 5, 1973, D.C., E.D. Mich. (Detroit), Doc. 74–70767, *Snorkel Fire Equipment Co.* v. *Ward LaFrance Truck Corp. and Reading Techmatic Corporation.*

3,411,424, W. W. Buechner, CYLINDRICAL CARRIER FOR PHOTOGRAPHIC SHEET MATERIALS; **3,528,760,** same, METHOD AND DEVICE FOR THE TREATMENT OF PAPER-BACKED PHOTOGRAPHIC SHEET MATERIALS, **filed** Dec. 19, 1973, D.C. (District of Columbia), Doc. 2198–73, *Werner W. Buechner* v. *Eastman Kodak Company.*

3,413,177. (See 3,257,253.)

3,439,950, A. Kunevicius, RESILIENT BUMPER STRIP **filed** July 31, 1972, D.C., N.D. Ohio (Cleveland), Doc. C–72–789, *Custom Trim Products, Inc.* v. *The Standard Products Co.* Stipulation and order dismissing action, Jan. 23, 1974.

3,496,911, A. Chmelar, ELECTROSTATIC FLOCKING; **3,551,178,** same METHOD AND APPARATUS FOR ELECTROSTATIC FLOCKING, **filed** Feb. 16, 1972, D.C., N.D. Ga. (Atlanta), Doc. 16205, *Velvetex Industrial Corporation* v. *Universal Textures, Inc.* Stipulation and order of voluntary dismissal entered dismissing complaint, defensive pleadings and counterclaims without prejudice, Nov. 28, 1973.

3,528,760. (See 3,411,424.)

3,551,178. (See 3,496,911.)

3,560,998, R. S. Walton, ELECTRONICALLY CONTROLLED TIMEPIECE USING LOW POWER MOS TRANSISTOR CIRCUITRY; **3,576,099,** same, SOLID STATE TIME PIECE HAVING ELECTRO-OPTICAL TIME DISPLAY; **3,664,118,** same, ELECTRONICALLY CONTROLLED TIMEPIECE USING LOW POWER MOS TRANSISTOR CIRCUITRY; **3,672,155,** Bergey and Walton, SOLID STATE WATCH; **3,707,071,** R. S. Walton, SOLID STATE TIMEPIECE; **3,714,867,** B. M. Dargent, SOLID STATE WATCH INCORPORATING LARGE-SCALE INTEGRATED CIRCUITS; **3,760,584,** same, INTEGRATED CIRCUIT SOLID STATE WATCH, **filed** Oct. 17, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73-2433 WPG, *Time Computer, Inc.* v. *Hughes Aircraft Company.*

3,576,099. (See 3,560,998.)

3,599,722. (See 3,346,052.)

3,664,118. (See 3,560,998.)

3,667,435, R. M. Bygdnes, VEHICULAR ENGINE BRAKE ASSEMBLY, **filed** June 25, 1973, D.C., C.D. Calif. (Los Angeles), Doc. 73-1453-RJK, *Rocky Cycle Co. Inc. and Richard M. Bygdnes* v. *Ralph D. Milligan.* Filed consent judgment and order thereon enjoining defendant from infringing plaintiff's patent, entered Jan. 25, 1974.

3,672,155. (See 3,560,998.)

3,675,721. (See 3,346,052.)

3,707,071. (See 3,560,998.)

3,714,867. (See 3,560,998.)

3,760,584. (See 3,560,998.)

Re. 24,165. (See 2,441,960.)

Certificates of Correction for the Week of July 30, 1974

3,686,727	3,774,011	3,787,954	3,797,885
3,710,036	3,774,580	3,788,331	3,797,927
3,732,659	3,774,752	3,788,616	3,798,040
3,747,917	3,774,991	3,789,057	3,798,076
3,748,731	3,775,113	3,789,589	3,798,085
3,748,826	3,775,685	3,789,916	3,798,137
3,750,213	3,776,003	3,789,934	3,798,166
3,750,248	3,776,253	3,790,183	3,798,206
3,750,305	3,776,603	3,790,514	3,798,250
3,750,381	3,776,634	3,790,635	3,798,306
3,751,512	3,777,468	3,790,715	3,798,522
3,751,754	3,777,922	3,790,924	3,798,538
3,751,805	3,778,373	3,791,132	3,798,659
3,751,819	3,778,479	3,791,796	3,798,686
3,753,862	3,779,136	3,791,939	3,798,710
3,754,169	3,779,188	3,792,134	3,799,231
3,755,386	3,779,521	3,792,253	3,799,452
3,756,943	3,779,559	3,792,887	3,799,678
3,757,282	3,780,067	3,793,021	3,799,857
3,758,823	3,780,134	3,793,048	3,799,896
3,758,929	3,780,442	3,793,102	3,800,232
3,758,974	3,780,597	3,793,706	3,800,391
3,759,136	3,780,959	3,794,050	3,800,550
3,759,721	3,781,234	3,794,082	3,800,585
3,759,790	3,781,472	3,794,565	3,800,716
3,759,804	3,781,605	3,794,635	3,800,877
3,760,903	3,781,770	3,794,875	3,801,114
3,761,267	3,781,985	3,795,086	3,801,526
3,761,528	3,782,661	3,795,394	3,801,641
3,761,852	3,783,450	3,795,551	3,801,648
3,762,460	3,783,754	3,796,396	3,801,818
3,763,098	3,784,047	3,796,799	3,801,856
3,766,498	3,784,319	3,797,175	3,801,877
3,766,728	3,784,559	3,797,233	3,802,238
3,767,773	3,785,269	3,797,265	3,802,363
3,767,828	3,785,492	3,797,329	3,802,545
3,770,661	3,785,684	3,797,343	3,802,582
3,771,545	3,785,973	3,797,410	3,802,679
3,771,638	3,786,057	3,797,421	3,802,718
3,772,682	3,786,070	3,797,432	3,802,805
3,772,755	3,786,963	3,797,452	3,802,877
3,773,004	3,787,016	3,797,499	3,802,978
3,773,178	3,787,125	3,797,559	3,805,056
3,773,927	3,787,399	3,797,724	

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are available for licensing in accordance with the licensing policy of each agency-sponsor.

Copies of patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22151, at the prices cited. Requests for copies of patent applications must include the patent application number and the title.

Paper copies of patents cannot be purchased from NTIS but are available from the Commissioner of Patents, Washington, D.C. 20231, at $0.50 each.

Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator, National Technical Information Service.

DEPARTMENT OF THE AIR FORCE
AF/JACP, Washington, D.C. 20314

Patent application 310,613. Barrier Ring Injector. Filed Nov. 29, 1972. PC $4/MF $1.45.

Patent application 314,623. Overload Clutch With Zero Parasitic Torque. Filed Dec. 13, 1972. PC $4/MF $1.45.

Patent application 315,744. Radioactive Preionization Method and Apparatus for Pulsed Gas Lasers. Filed Dec. 15, 1972. PC $4/MF $1.45.

Patent application 315,767. Coating for Lightning Protection of Structural Reinforced Plastics. Filed Dec. 15, 1972. PC $4/MF $1.45.

Patent application 326,208. Portable Etching System for Holes Drilled in Metals. Filed Jan. 24, 1973. PC $4/MF $1.45.

Patent application 332,539. Apparatus for the Direct Measurement of Thermal Stresses. Filed Feb. 14, 1973. PC $4/MF $1.45.

Patent application 336,584. Thermal Stabilization of Polybenzimidazole Fiber Fabrics. Filed Feb. 28, 1973. PC $4/MF $1.45.

Patent application 344,787. Thermally Stable Phenylated Heterocyclic Aromatic Polymers and Method of Synthesis. Filed Mar. 26, 1973. PC $4/MF $1.45.

Patent application 365,908. Dual Mode Auxiliary Power Unit. Filed June 1, 1973. PC $4/MF $1.45.

Patent application 366,908. Multi-Component Flow Probe. Filed June 4, 1973. PC $4/MF $1.45.

Patent application 371,089. Benzothiophenedioxideisoquinoline Polymers and Method for Synthesizing Same. Filed June 18, 1973. PC $4/MF $1.45.

Patent application 375,557. Angle Data Processor for Reciprocating Narrow Scanning Beams. Filed Aug. 2, 1973, PC $4/MF $1.45.

Patent application 379,024. Vacuum Brazing Tantalum Alloys. Filed July 13, 1973. PC $4.25/MF $1.45.

Patent application 379,029. Method and Means for Determining Fatigue Damage and Surface Stress. Filed Aug. 13, 1973. PC $4/MF $1.45.

Patent application 386,923. Method for Praparing Lead Lanthanum Zirconate-Titanate Powders. Filed Aug. 9, 1973. PC $4/MF $1.45.

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
National Institutes of Health, Chief, Patent Branch, Westwood Building, Bethesda, Md. 20014

Patent application 445,665. Method of Purifying Enzymes Using Boronic Acids Covalently Bonded to an Insoluble Support. Filed Feb. 25, 1974. PC $4.25/MF $1.45.

Patent 3,799,672. Oximeter for Monitoring Oxygen Saturation in Blood. Filed Sept. 15, 1972. Patented Mar. 26, 1974. Not available NTIS.

U.S. DEPARTMENT OF THE INTERIOR
Branch of Patents, 18th and C sts. NW., Washington, D.C. 20242

Patent application 453,140. Process for the Preparation of a Stable Salt Form of a Sulfonated Polyaryiether Sulfone. Filed Mar. 20. 1974. PC $4/MF $1.45.

Patent application 457,309. Method of Distributing Feed in an HTME Distillation Plant. Filed Apr. 2, 1974. PC $4.75/MF $1.45.

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
Assistant General Counsel for Patent Matters, NASA—Code GP–2, Washington, D.C. 20546

Patent 3,799,149. Metabolic Analyzer. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,799,475. Airflow Control System for Supersonic Inlets. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,800,227. Pulse Code Modulated Signal Synchronizer. Patented Mar. 26, 1974. Not available NTIS.

Patent 3,802,779. Method and Apparatus for Optically Monitoring the Angular Position of a Rotating Mirror. Patented Apr. 9, 1974. Not available NTIS.

Patent 3,803,393. A Synchronous Binary Array Divider. Patented May 3, 1974. Not available NTIS.

Patent 3,803,445. Rotating Raster Generator. Patented Apr. 9, 1974. Not available NTIS.

Patent 3,805,303. Reduced Gravity Fecal Collector Seat and Urinal. Patented Apr. 23, 1974. Not available NTIS.

Patent 3,806,815. Decision Feedback Loop for Tracking a Polyphase Modulated Carrier. Patented Apr. 23, 1974. Not available NTIS.

Patent 3,806,816. Pulse Code Modulated Signal Synchronizer. Patented Apr. 23, 1974. Not available NTIS.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF JULY 6, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	7-19-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—I. MARCUS, Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides; Acid Halides.	6-18-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	11-15-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	8-23-73
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	7-3-73
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—N. ANSHER, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	11-28-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	2-1-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	11-1-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—L. FORMAN, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	4-11-73
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—W. L. CARLSON, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-10-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	1-12-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	1-2-74
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools; Cutlery; Jacks.	10-17-73
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	11-2-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	9-10-73
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	11-1-73

Expiration of patents: The patents within the range of numbers indicated below expire during July 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,797,414 to 2,801,413, inclusive
Plant Patents..... Numbers 1,612 to 1,625, inclusive

REISSUES

JULY 30, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,084

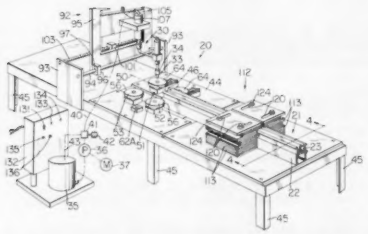
APPARATUS FOR MAKING A THERMALLY INSULATING JOINT CONSTRUCTION

Layle B. Barker, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.

Original No. 3,624,885, dated Dec. 7, 1971, Ser. No. 877,212, Nov. 17, 1969. Application for reissue Sept. 25, 1973, Ser. No. 400,618

Int. Cl. B23p *17/00, 19/00*

U.S. Cl. 29—200 A **16 Claims**



A head assembly having a nozzle for dispensing a thermal insulating material is supported at a dispensing station and a dual-purpose device is provided and used for supporting and moving straight rigid members in a rectilinear path past the dispensing station so that an open channel in each member may be filled by gravity with the thermal insulating material. A guide assembly is also provided and adjusted so that members of irregular cross-sectional configuration may be easily guided along the rectilinear path.

28,085

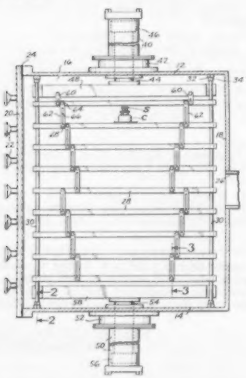
CONTAINER STOPPERING APPARATUS

Leonard C. Costello, Warminster, and Karl H. Wiegmann, Huntingdon Valley, Pa., assignors to Hull Corporation, Hatboro, Pa.

Original No. 3,537,233, dated Nov. 3, 1970, Ser. No. 660,717, Aug. 15, 1967. Application for reissue Aug. 7, 1972, Ser. No. 278,183

Int. Cl. B30b *7/02;* **B65b** *7/28, 31/02*

U.S. Cl. 53—102 **7 Claims**



A housing adapted to be evacuated has top and bottom fluid pressure piston-cylinder units between which are positioned a plurality of shelves movable vertically relative to each other upon activation of the units. In one embodiment the shelves are interconnected by vertically slotted links, the top shelf being secured to the piston rod of the top piston-cylinder unit, with the lower shelves suspended therefrom. In another embodiment the shelves are interconnected by threaded bolts in place of the slotted links. In still another embodiment the shelves are supported in spaced apart relation resiliently by springs encircling guide rods.

28,086

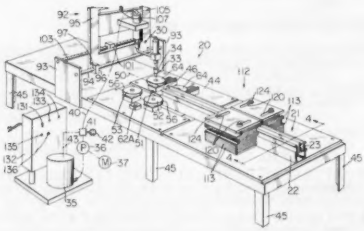
APPARATUS FOR MAKING A THERMALLY INSULATING JOINT CONSTRUCTION

William H. Holliday and Layle B. Barker, Richmond, Va., assignors to Reynolds Metals Company, Richmond, Va.

Original No. 3,624,885, dated Dec. 7, 1971, Ser. No. 877,212, Nov. 17, 1969. Application for reissue Sept. 25, 1973, Ser. No. 400,533

Int. Cl. B23p *17/00, 19/00*

U.S. Cl. 29—200 A **11 Claims**



A head assembly having a nozzle for dispensing a thermal insulating material is supported at a dispensing station and a dual-purpose device is provided and used for supporting and moving straight rigid members in a rectilinear path past the dispensing station so that an open channel in each member may be filled by gravity with the thermal insulating material. A guide assembly is also provided and adjusted so that members of irregular cross-sectional configuration may be easily guided along the rectilinear path.

28,087

APPARATUS FOR WINDING AND PLACING COILS IN THE SLOTS OF A STATOR

Donald E. Hill and Stanley D. Payne, Fort Wayne, Ind., and Robert G. Walker, Brighton, Mich., assignors to Industra Products Inc., Fort Wayne, Ind.

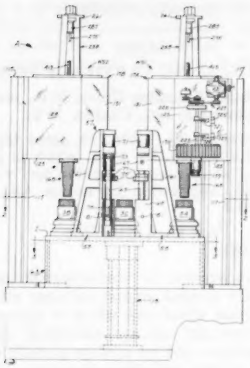
Original No. 3,625,261, dated Dec. 7, 1971, Ser. No. 845,804, July 29, 1969. Application for reissue July 3, 1972, Ser. No. 268,864

Int. Cl. H02k *15/00, 15/06*

U.S. Cl. 29—205 D **26 Claims**

Apparatus for winding and placing coils in the slots of a stator comprising a rotary index table carrying three sets of placer fingers spaced at 120° intervals, each set being adapted to hold a plurality of pole windings for a stator. The table is adapted to be indexed successively to

bring each set of placer fingers from a first winding station to a second winding station, thence to a placing station, and thence back to the first winding station, with a dwell at each station. At each of the winding stations, there is provided a coil winding and transfer mechanism including a coil form, a flyer for winding coils on the coil form, and means for transferring coils from the coil form to the set of placer fingers at the respective winding station. Each set of placer fingers is indexable during its dwell at each winding station for reception of successive sets of coils in proper position for placement of the coils in the stator.



After the winding of coils and their transfer to the set of fingers at the first winding station, the table is indexed to bring this set of fingers with the coils thereon to the second winding station. After the winding of additional coils and their transfer to the set of fingers at the second station, the table is indexed to bring the set of fingers with the coils thereon to the placing station, where a stator is placed on the fingers and the coils are pushed into the slots of the stator. The stator with the coils in its slots is then removed, and the table indexed to bring the set of fingers to the first winding station to start another cycle.

28,088

METHOD OF FORMING A RECTANGULAR HEAT DUCT

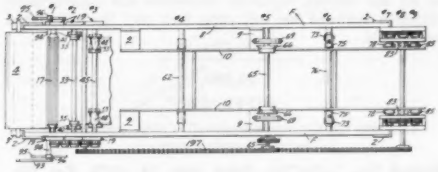
Leroy E. Anderson and Gerald J. Munn, Detroit Lakes, Minn., assignors to Manufacturers Systems, Inc., Detroit Lakes, Minn.

Original No. 3,722,443, dated Mar. 27, 1973, Ser. No. 205,843, Dec. 8, 1971, which is a division of application Ser. No. 12,663, Feb. 19, 1970, now Patent No. 3,636,-903. Application for reissue June 6, 1973, Ser. No. 367,581

Int. Cl. B21d *39/02*

U.S. Cl. 113—54 **34 Claims**

A machine designed to continuously progress a pair of elongated flat sheets of metal longitudinally through a plurality of cooperative dies which progressively in sequential steps gradually shape the two sheets into a duct having a rectangular cross-sectional configuration. The machine utilizes cooperative rotary dies to shape and form the duct in a continuous operation to a length equal to that of the sheets so that rectangular ducts of any desired length can be produced in an automatic operation by merely inserting into the machine a pre-prepared roll comprised of a pair of sheets of metal of the desired length, the sheets entering the machine at one end and



leaving the same at the other end in the form of a continuous rectangular duct.

28,089

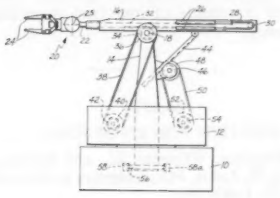
CONTROLLED TOGGLE MECHANISMS

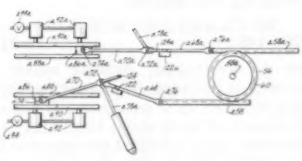
George C. Devol, 990 Ridgefield Road, Wilton, Conn. 06897

Original No. 3,535,952, dated Oct. 27, 1970, Ser. No. 755,210, Aug. 26, 1968. Application for reissue Oct. 25, 1972, Ser. No. 300,437

Int. Cl. G05g *1/04*

U.S. Cl. 74—520 **35 Claims**





A mechanism for operating a work element from one selected position to other selected positions in succession is described, utilizing the special property of toggles so that the end position is reached with smooth deceleration and without overtravel. Multiple toggles are used in a few embodiments, where each toggle has an input end that is adjustable while that toggle is buckled to correspond to the desired position that the work element will reach when a power actuator erects the toggle. One toggle is used for driving the work element in one direction and another toggle is used when the work element is to be driven in the opposite direction. Four toggles allow for drive in either direction by one toggle while another toggle is available for adjustment in controlling the next motion in either direction. This saves time, enabling each stroke to follow

another without delay for adjustments. The selectively used toggles can be compactly arranged side-by-side at the same side of a work shaft but connected to opposite sides of the shaft, to rotate the shaft in either required operating direction. Similarly, a common adjusting unit can be used for all the toggles, utilizing extensible and contractable couplings between the adjusting unit and the adjustable toggle ends.

28,090

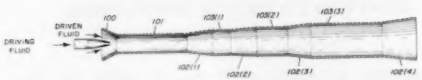
DIFFUSER

Douglas M. Gluntz, Campbell, Calif., assignor to General Electric Company

Original No. 3,494,296, dated Feb. 10, 1970, Ser. No. 737,066, June 14, 1968. Application for reissue Jan. 31, 1972, Ser. No. 222,389

Int. Cl. F04f *5/44*

U.S. Cl. 417—196 **23 Claims**



An improved diffuser for converting fluid momentum into static pressure. Typically, a generally conical diffuser is provided with one or more spaced intermediate approximately cylindrical recovery sections. This multistage diffuser is capable of improved momentum conversion efficiency.

28,091

PROTEIN FIBER FORMING

Wilhelmus Heusdens, Wilmette, Ill., and Christopher W. Frederiksen, St. Louis, Mo., assignors to Ralston Purina Company, St. Louis, Mo.

No Drawing. Original No. 3,662,671, dated May 16, 1972, Ser. No. 825,973, May 19, 1969. Application for reissue Oct. 30, 1972, Ser. No. 302,054

Int. Cl. A23j *3/00;* **A23l** *1/20*

U.S. Cl. 426—148 **32 Claims**

A process of continuously forming tender textured protein structures is disclosed. The structures are formed from an aqueous slurry of a proteinaceous material having a solids content of up to about 35 percent by weight. The proteinaceous slurry is formed into textured filaments or fibers by continuously heating the slurry under pressure and cooling the slurry.

28,092

CASSETTE TAPE READ OUT DEVICES

Nardino Righi, Milan, Italy, assignor to Ri-El Ricercle Elettroniche S.R.L., Cologno, Monzese, Italy

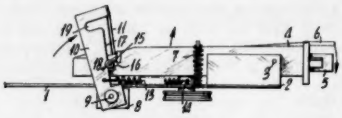
Original No. 3,752,488, dated Aug. 14, 1973, Ser. No. 132,669, Apr. 9, 1971. Application for reissue Nov. 16, 1973, Ser. No. 416,418

Claims priority, application Italy, Apr. 14, 1970, 23,275/70

Int. Cl. G11b *5/86*

U.S. Cl. 274—4 E **7 Claims**

A cassette tape read out device comprising a cartridge support frame which may be rotated by a slight downward manual pressure to the removal position for a previously inserted cartridge; the device also comprising a



spring-biased hooking swinging member, serving to stop the frame in its operating positions.

28,093

WOUND-HEALING CARTILAGE POWDER

Leslie L. Balassa, Blooming Grove, N.Y., assignor to Lescarden Ltd., Goshen, N.Y.

No Drawing. Original No. 3,400,199, dated Sept. 3, 1968, Ser. No. 435,693, Feb. 26, 1965, which is a continuation-in-part of abandoned application Ser. No. 176,443, Feb. 28, 1962. Application for reissue Aug. 13, 1970, Ser. No. 63,669

Int. Cl. A61k *17/00*

U.S. Cl. 424—95 **22 Claims**

The invention pertains to wound-healing compositions comprising finely divided animal cartilage which is free of an interposition effect and which is characterized as having a substantially average maximum particle size of about 70 microns and an average particle size of between about 1 micron and about 40 microns. The invention also relates to methods of use of such material in a wound-healing method.

28,094

BEARING ARRANGEMENT FOR ELECTRIC MOTORS

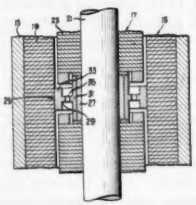
Clinton A. Boyd, Tulsa, Okla., assignor to Borg-Warner Corporation, Chicago, Ill.

Original No. 3,506,861, dated Apr. 14, 1970, Ser. No. 574,093, Aug. 22, 1966. Application for reissue May 21, 1973, Ser. No. 362,026

Int. Cl. H02k *5/16*

U.S. Cl. 310—90 **5 Claims**

An elongated electric motor having a stator comprising a plurality of magnetic laminations. A rotor including a plurality of segments and a supporting shaft disposed within the stator. The rotor is supported by a plurality of spaced apart bearing assemblies which include a stationary journal supported by the stator and a sleeve which rotates with the shaft. The journal is made



of a non-magnetic material having a resistivity of at least 100 microhms/cm.^{3} when measured at 20 degrees centigrade.

28,095

WATER DISTRIBUTING HOSE

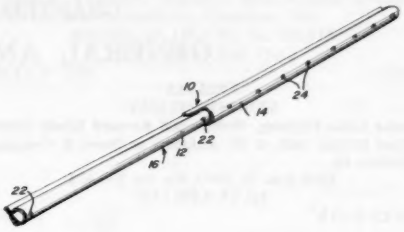
Richard D. Chapin, 368 N. Colorado Ave., Watertown, N.Y. 13601

Original No. 3,698,195, dated Oct. 17, 1972, Ser. No. 40,138, May 25, 1970. Application for reissue Mar. 15, 1973, Ser. No. 341,763

Int. Cl. A01g *25/02*; E02b *13/00*

U.S. Cl. 61—12 17 Claims

A water distributing hose for use in trickle irrigation comprising an outer tubular wall and an inner wall spaced interiorly from the outer wall and defining an inner tubular member fixed to the outer tubular wall for generally line contact therewith along the full length thereof. Both walls are perforated, normally in opposed relation to the line contact therebetween with the outer wall having a substantially greater number of openings. The inner tube functions so as to carry water along the full length of the hose and maintain, to a substantial degree, the pressure thereof. The water discharges through the inner wall openings and subsequently flows to and through the outer wall openings immediately adjacent to each inner wall opening for a trickle-like discharge therefrom.



PATENTS

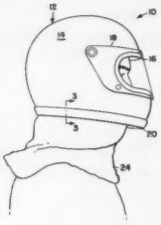
GRANTED JULY 30, 1974

GENERAL AND MECHANICAL

3,825,952
SKIRTED HELMET

Roscoe Louis Pershing, Moline, and Bernard Edwin Romig, East Moline, both of Ill., assignors to Deere & Company, Moline, Ill.

Filed Sept. 21, 1973, Ser. No. 399,411
Int. Cl. A42b *3/00*
U.S. Cl. 2—3 R 3 Claims

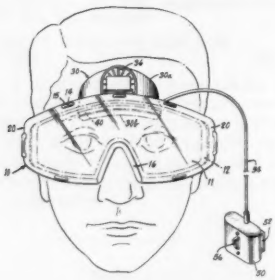


A helmet of a type adapted for covering the entire head of a wearer has a flexible skirt releasably secured to the periphery of the inside of the helmet adjacent the opening therein. For releasably attaching the skirt, one edge thereof is provided with a male strip of material of the type having the trademark name of VELCRO while the inside of the helmet is provided with a female strip of VELCRO-type material.

3,825,953
ANTI-FOGGING DEVICE FOR EYE SHIELDS

Robert R. Hunter, 234 Stockbridge Rd., Lenox, Mass. 01240

Filed June 20, 1973, Ser. No. 371,897
Int. Cl. A61f *9/00*
U.S. Cl. 2—14 K 6 Claims

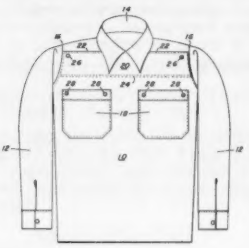


For use with a ski goggle or the like, an anti-fogging device including a housing adapted to be positioned and retained between the top transverse portion of a conventional goggle frame and a wearer's forehead, and defining a passage for conducting air from the exterior into the space between the goggle lens and the wearer's face so that the air is directed toward the inner surface of the lens. A fan, having a motor carried by the housing, is mounted in the passage for forcing air therethrough. Power may be supplied to the motor from batteries carried in a case secured to the wearer's clothing.

3,825,954
SPORT SHIRT

Vera Naumovski, 60 Roseland Dr., Toronto, Ontario, Canada

Filed Mar. 2, 1973, Ser. No. 337,499
Int. Cl. A41d *3/00*
U.S. Cl. 2—115 1 Claim

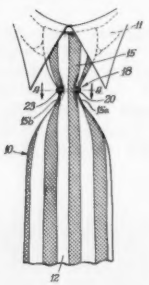


A sport shirt including a foldable flap on the upper portion of said shirt body adapted to be folded in either an upward or downward position thereby changing the appearance of the shirt and presenting a different design and impact to the viewer. In one embodiment the flap is relatively wide at the top and the bottom. In a second embodiment the flap is triangular in shape.

3,825,955
DEVICE FOR SIMULATING KNOT IN NECKTIE OR THE LIKE

Herbert W. Penzel, 5255 N. LaPorte Ave., Chicago, Ill. 60630

Filed Apr. 26, 1973, Ser. No. 354,494
Int. Cl. A41d *25/02*
U.S. Cl. 2—150 5 Claims

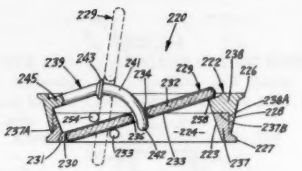


The large end of a necktie is wrapped about the small end with the large end then being laid down over the wrap. A pin extends through the two sides of this overlying part of the large end and has abutments on the end to pinch the two sides toward each other. The pin extends behind the wrap and the small end so that the size of the neck loop of the tie can be adjusted without disturbing the simulated knot.

3,825,956
HEART VALVE WITH TWO-PART BASE

Francis W. Child, Maple Plain, Minn., assignor to Medical Incorporated, Minneapolis, Minn.

Filed July 13, 1972, Ser. No. 271,549
Int. Cl. A61f 1/22
U.S. Cl. 3—1 8 Claims

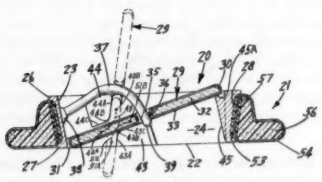


A heart valve having a free-floating pivoting disc for controlling the flow of blood. The disc is located within a passage in the base of the valve. Inwardly directed proximal and distal pivots control the pivoting movement of the disc. The pivots are offset from a diameter of the disc so that the disc pivots between its open and closed positions between its center and outer peripheral edge of the disc. The disc is held in free-floating assembled relation with the pivots and base with a curved retaining rod having a curved end projected through a central hole in the disc. The base has two joined members. The pivots are on one base member and retaining rod is on the other base member.

3,825,957
PIVOTING DISC HEART VALVE WITH ROD GUIDE

Robert L. Kaster, 15 Parkwood Rd., Trumbull, Conn. 06611

Filed Aug. 22, 1972, Ser. No. 282,706
Int. Cl. A61f 1/22
U.S. Cl. 3—1 12 Claims

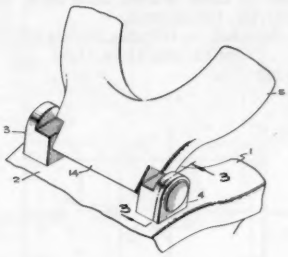


A heart valve having a held pivoting disc for controlling the flow of blood. The disc is located within a passage in the base of the valve. Inwardly directed proximal and distal pivots control the pivoting movement of the disc. The pivots are offset from a diameter of the disc so that the disc pivots between its open and closed positions between its center and an outer peripheral edge of the disc. The disc is haeld in free-floating assembled relation with the pivots and base with a curved retaining rod having a curved end projected through a central hole in the disc. A suture collar surrounds and is mounted on the outer portions of the base. A low friction sleeve interposed between the base and the collar permits rotation of the valve relative to the suturing collar after the collar has been attached to the heart tissue.

3,825,958
SELF-RAISING SEAT

Bernard E. Higginson, Columbus, Miss., assignor to Beneke Division, Beatrice Foods Co., Columbus, Miss.

Filed Feb. 15, 1972, Ser. No. 226,618
Int. Cl. A47k 13/00, 13/12
U.S. Cl. 4—240 1 Claim

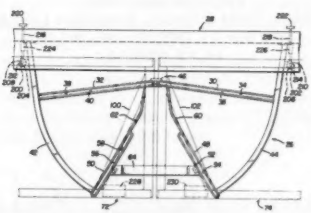


A self-raising seat for water closets, wherein the seat is fixedly mounted upon a hinge tube, with the tube ends hingedly held in hinge posts secured to the closet bowl. A torsion spring composed of a bundle of leaf springs has one end attached to one end of the hinge tube and its opposite end projecting beyond the opposite end of the tube. A spring holder rotatably mounted in a hinge post is fitted over the projecting end of the spring bundle, and an adjustment screw through the hinge post and in contact with an abutment on the spring holder biases the spring to establish an at rest, raised position of the seat. In another form of the invention, the projecting end of the spring bundle seats in a recess of similar cross-section in the hinge post, providing a fixed anchor for the spring end but no means for spring adjustment.

3,825,959
SEATING DEVICE CONVERTIBLE INTO A BED

Martin Shankman, 4750 Alhambra Cir., Coral Gables, Fla. 33146

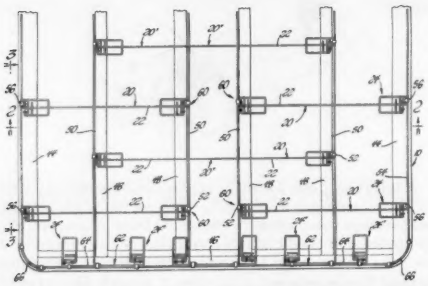
Filed Mar. 16, 1973, Ser. No. 341,906
Int. Cl. A47c 17/14, 17/40
U.S. Cl. 5—8 10 Claims



The seating device includes a first frame supported horizontally, and a seating means movable arcuately on the first frame, the seating means including a second frame mounted on the first frame, a support mounted on the second frame and movable longitudinally of the second frame, and a pair of superposed cushions mounted on the support. The support can be extended to expose part of the second frame, and one of the cushions can be placed on the exposed frame to form with the other cushion a bed mattress. In this composite structure, the first frame includes two horizontal trackways, and the second frame includes a pair of pins extending through the trackways respectively and projecting downward below the trackways to terminate slightly above floor level. The pins are upwardly removable from the trackways to permit the entire

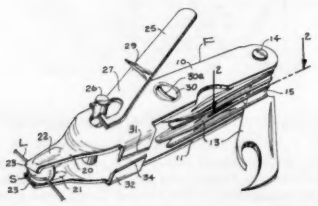
seat means to be removed from the first frame and to rest on the pins which then act as floor engaging legs for the seat means.

3,825,960
NEW BOX SPRING
Harold W. Inman, Birmingham; Zygmunt M. Surletta, Detroit, and Chester E. Klicki, Warren, all of Mich., assignors to Lear Siegler, Inc., Detroit, Mich.
Filed Jan. 18, 1973, Ser. No. 324,722
Int. Cl. A47c *23/04, 25/00*
U.S. Cl. 5—247 **35 Claims**



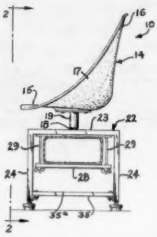
A box spring assembly including a wooden frame with a plurality of spring members arranged on the frame to define a load-supporting area having side and end marginal edges. Each of the spring members is defined by an integral wire having a straight section with a fishmouth section at each end thereof. The spring members are disposed with the straight sections thereof perpendicular to the side marginal edges, and each spring member is disposed in isolated non-contacting relationship with all of the remaining spring members. Various species are illustrated showing the individual spring members in various patterns; but in each pattern, each of the spring members is isolated and not contacting any other spring member. Connecting means such as wires or grids are utilized for interconnecting the spring member.

3,825,961
FISHERMAN'S TOOL
Gerald B. Klein, 13451 Stuart Ct., Broomfield, Colo. 80020
Filed Nov. 15, 1972, Ser. No. 306,577
Int. Cl. B25f *1/00*
U.S. Cl. 7—1 H **5 Claims**



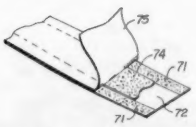
A tool, which may be used as a fisherman's tool, having an elongated handle which includes parallel cantilevered members extending from one end and lever means arranged to flex the members toward each other. The members are provided with surfaces for crushing or cutting fishing leader material and crimping split shot sinkers. Various blades are mounted within the handle similar to a jackknife for performing other useful functions.

3,825,962
CONVERTIBLE CHAIR FOR FISHERMAN & CAMPERS
Harry C. Grounds, 477 S. Cretin, St. Paul, Minn. 55105, and Eugene W. Otto, 2415 Cavell Ave. South, St. Louis Park, Minn.
Filed June 4, 1973, Ser. No. 366,787
Int. Cl. B63b *29/00*
U.S. Cl. 9—7 **7 Claims**



A plate-like base has a moulded chair seat mounted thereon for rotation about a vertical axis. Laterally spaced supports are mounted on the base to straddle a boat seat. Clamping bars are mounted on the base to secure the base and chair seat to a boat seat and the laterally spaced supports are provided with leg portions which adjust the length of the laterally spaced supports to engage the hull of the boat to provide added support for the chair seat.

3,825,963
METHOD AND APPARATUS FOR CASING BOOKS AND PRODUCT THEREOF
William H. Abildgaard, Los Altos Hills, and Charles T. Groswith, III, Los Altos, both of Calif., assignors to Velo-Bind, Inc., Sunnyvale, Calif.
Continuation-in-part of Ser. No. 146,648, May 25, 1971, Pat. No. 3,749,422. This application Sept. 22, 1972, Ser. No. 291,206
Int. Cl. B42c *11/00*
U.S. Cl. 11—1 R **2 Claims**



In one form of the invention, a case for a book has a spine strip of cover material coated with pressure-sensitive adhesive in the spine area and initially separate covers on either side of the spine area. A pad of resilient material such as polyurethane foam is positioned in the center of the spine area of the case and is coated on its exposed surface with pressure-sensitive adhesive initially protected by release paper, which is removed prior to attachment of an uncased book thereto. The spine strip overlaps the spine edges of the covers and is secured thereto by the pressure-sensitive material. The uncased book is preferably provided with end leaves having pressure-sensitive adhesive initially protected with release paper fabricated in a manner to facilitate stripping off the release paper. Apparatus used to case the book has a table on which the case is positioned and clamps pivoted to the table, and movable relative to each other depending on the thickness of the uncased book. In a preferred form of the invention, edge guides for the covers move inward and outward in relation to movement of the clamps toward and away from each other to

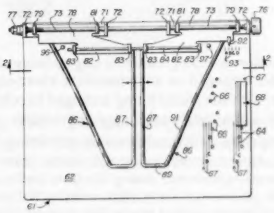
center the covers relative to the uncased book. The method consists in pivoting the clamp to bring the spine edge of the uncased book into contact with the pressure-sensitive spine pad of the case and then to strip away the release paper from the end leaves so that the latter adhere to the insides of the top and bottom covers of the case.

3,825,964

DEVICE AND METHOD FOR CASING BOOKS

Charles T. Groswith, III, Los Altos, and Danilo P. Buan, Pleasanton, both of Calif., assignors to Velo-Bind, Inc., Sunnyvale, Calif.

Filed Apr. 17, 1973, Ser. No. 351,879
Int. Cl. 42c *11/00*
U.S. Cl. 11—3 **3 Claims**



An uncased book, such as shown in U.S. Pat. No. 3,596,929 having end leaves fabricated with pressure sensitive adhesive and protected by release paper is attached to a case of the type having a spine pad also fabricated with pressure sensitive adhesive by the device. A table supports various adjustable members including locators which first gauge the thickness of the uncased book to indicate a case of proper spine width to be selected. The case is placed on the table and centered by use of side and top edge guides. The locators are adjusted so that the spine edge of the uncased book may be guided to contact the center of the spine pad. A guide rod positions the top edge of the uncased book a predetermined distance below the top edge of the case. The uncased book spine now permanently adheres to the case spine. The book covers are closed around the book and the end leaf release paper stripped away, permitting the end leaf adhesive to secure the end leaves to the insides of the covers.

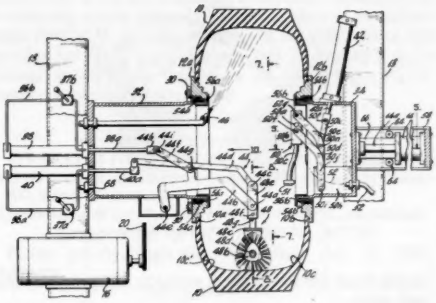
3,825,965

APPARATUS FOR CLEANING TIRE INNER-LINERS

Glenn M. Root, Snyder; Ronald G. Root, Glenwood; Alvin L. Parenti, Buffalo, and Arthur J. Sullivan, Staten Island, all of N.Y., assignors to Esso Research and Engineering Company, Linden, N.J.

Filed Apr. 9, 1973, Ser. No. 349,394
Int. Cl. A46b *13/04*
U.S. Cl. 15—21 D **10 Claims**

An apparatus for cleaning the interior of tubeless tires employs a combination of solvent and brushing action, applied while the inflated tire is being rotated. The tire is rotated and cleaned for a predetermined period of time sufficient to remove residual mold release agents and other contaminants, thus preparing the tire interior for the subsequent application of a liquid air barrier coating or another treating requiring a clean interior surface. After cleaning, the solvent is forced out by the air pressure within the tire through a solvent removal



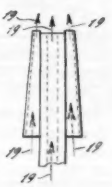
system, following which the casing is rinsed by clean solvent prior to deflation and removal of the tire from the apparatus.

3,825,966

VENTURI WINDSHIELD WIPER BLADE

Everett J. Hall, 13962 Ordner Dr., Strongsville, Ohio 44136

Filed Oct. 26, 1972, Ser. No. 300,985
Int. Cl. B60s *1/46*
U.S. Cl. 15—250.04 **1 Claim**



An improved blade for a windshield wiper, and which is designed to incorporate a venturi effect so to create a suction force inside the blade, thus providing a uniform contact on the windshield throughout the blade length; the device consisting of two wedge-shaped rubber blades enjoined to provide a central hollow space between the blades, the hollow space being closed at opposite ends by a bottom insert and a top insert, the bottom insert including a tubular nipple for connection to a flexible hose from a washer fluid tank.

3,825,967

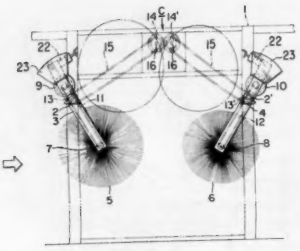
BRUSH CONTROL DEVICE FOR VEHICLE CLEANING APPARATUS

Shigeo Takeuchi, Nagoya, Japan, assignor to Takeuchi Tekko Kabushiki Kaisha, Aichi-ken, Japan

Filed Apr. 25, 1973, Ser. No. 354,501
Claims priority, application Japan, May 19, 1972, 47-49715
Int. Cl. B60s *3/06*
U.S. Cl. 15—21 D **1 Claim**

This invention relates to a control device for vehicle top cleaning apparatus of the type having first and second rotatable brushes horizontally supported on a portal frame structure by first and second brush arms mounted on the frame for swinging movement back and forth thereof. A first support shaft is associated with the first brush arm for rotation therewith and a second supported shaft is associated with the second brush arm for rotation therewith, and a clutch mechanism is arranged between said first and second support shafts. The clutch mechanism is engagable to cause said

second brush arm to swing upwardly with the upward swing of said first brush arm and disengagable to allow said first and

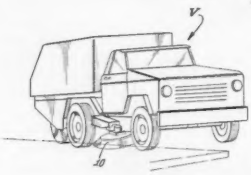


second brush arms to swing downwardly independently from each other.

3,825,968
GUTTER BROOM SUSPENSION

Gregory J. Larsen, Claremont, Calif., assignor to Wayne Manufacturing Company, Pomona, Calif.

Filed Sept. 27, 1971, Ser. No. 183,826
Int. Cl. E01h *1/05*
U.S. Cl. 15—87 **13 Claims**

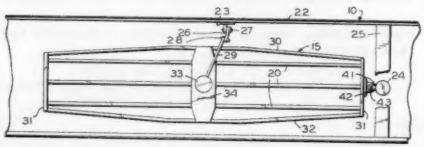


A street sweeper rotary gutter broom is mounted to a vehicle frame for fore and aft swinging movements by way of a parallel linkage pivoted to the frame, the combination of a spring and hydraulically powered cylinder coacting to effect lowering and raising of the broom to and from ground contact.

3,825,969
FRICTION WASHES

Jeff R. Welter, Vancouver, Wash., assignor to Daniel C. Hanna, Portland, Oreg.

Filed Jan. 8, 1973, Ser. No. 321,680
Int. Cl. B60s *3/00*
U.S. Cl. 15—97 R **12 Claims**

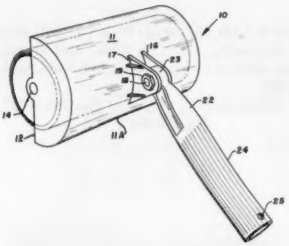


Curtains of ribbon portions suspended into a path of a car from a frame are reciprocated edgewise and oscillated facewise by a hinge suspension of the central portion of the frame and a crank drive connected to one end of the frame to cause gentle slapping and scraping actions of the ribbon portions on the car.

3,825,970
PAINT ROLLER FRAME WITH SPRAY SHIELD AND CLEAN-UP MEANS

Robert I. Hanssen, 116 Sibley Memorial Hwy., St. Paul, Minn. 55118

Filed Oct. 10, 1972, Ser. No. 296,235
Int. Cl. B44d *3/28*
U.S. Cl. 15—230.11 **8 Claims**

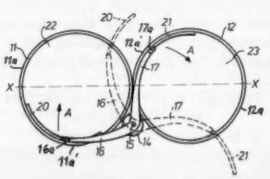


A paint roller retaining frame having an integral spray shield which is also arranged to accommodate clean-up of the used paint roller, with the frame being arranged to releasably retain or suspend cylindrical paint-applying rollers therein. The device comprises structural features providing, in combination; frame means for achieving releasable roller retention, a generally semi-cylindrical casing shell or enclosure having a pair of end plates and forming a substantial portion of the frame means and including means for retaining a roller receiving end cup therewithin for releasable roller retention. The integral frame and shield structure is preferably generally transparent so as to assist the user in viewing the action of the roller on the surface being painted and is also provided with a support edge surface which assists in guiding a flow of water to clean the roller after use. The end cups retain the paint-applying roller with its end or edge closely adjacent the end plate, so as to maximize the area capable of being covered with the roller. A centrally mounted pivotally adjustable handle is provided, the handle being centrally located on the outer circumference of the shield portion so as to provide a central pressure point to equalize pressure on both ends of the roller during use.

3,825,971
WIPER FOR WIPING ADJACENT SURFACES

Eckhard Ursel, Buhl, and Horst Seibicke, Altschweier, both of Germany, assignors to Robert Bosch, GmbH, Stuttgart, Germany

Filed June 7, 1972, Ser. No. 260,386
Claims priority, application Germany, June 28, 1971, 247535; Feb. 16, 1972, 2207103
Int. Cl. B60s *1/28*
U.S. Cl. 15—250.27 **12 Claims**



A wiper for simultaneously wiping two adjacent circular surfaces, has a shaft spaced from a plane passing through the axes of the two surfaces. The shaft is parallel to the plane and supports a bell crank whose two levers form an angle of less

than 180° with each other and which constitute two wiper arms to which wiper blades are connected. An oscillatory drive means rotates the shaft between two angular end positions to sweep the surfaces which are simultaneously wiped by the wiper blades.

3,825,972

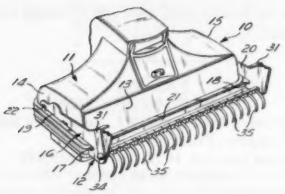
SHAG RUG FLUFFER

Charles H. MacFarland, Cleveland, Ohio, assignor to The Scott & Fetzer Company, Lakewood, Ohio

Filed Apr. 23, 1973, Ser. No. 353,246

Int. Cl. A47l 9/06

U.S. Cl. 15—373 **7 Claims**



A shag rug rake attachment for a vacuum cleaner nozzle is disclosed. The attachment includes a U-shaped racket which clips to the vacuum cleaner nozzle so that a shaft pivotally connected to the bracket extends across the forward end of the nozzle and is substantially normal to the directions of movement of the nozzle along the rug. A pluralíty of laterally spaced, arcuate tines project outwardly and downwardly from the shaft and then inwardly toward the nozzle. A releasable lock is provided to lock the shaft in any one of a plurality of positions so that, as to at least some of those positions, the tine ends extend beyond the plane of the bottom of the cleaner nozzle when the bottom of the cleaner nozzle is off the rug. When the cleaner nozzle is applied to the rug, the tines are flexed so that tangents at tine-rug contact locations define acute angles with the rug and the measure of the angles is inversely related to the extent of tine extension beyond the plane. Increased flexure of the tines provides more rigid tines and increases the hooked configuration of the tines to more effectively comb deep pile shag rugs.

3,825,973

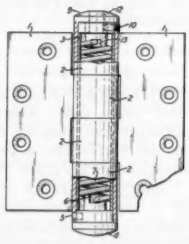
ADJUSTABLE DOOR HINGE CONTAINING COIL SPRING

Joseph W. Gwozdz, Clark Summit, Pa., assignor to McKenney Manufacturing Company, Scranton, Pa.

Filed Jan. 18, 1973, Ser. No. 324,819

Int. Cl. E05f 1/12

U.S. Cl. 16—189 **6 Claims**



A tubular pivot pin inside the barrel of a pair of hinge leaves contains a coil spring. Mounted in the opposite ends of the barrel are plugs, one of which is provided with an axial passage through it having an adjustment member therein provided with an outer portion rotatably mounted in the passage and an inner portion projecting from the inner end of the plug. The ends of the spring are connected to the plugs. Releasable interengaging means normally prevent rotation of the adjustment member in the plug passage, but the outer end of that member has means for receiving a tool for turning it in the passage to adjust the tension on the spring when the interengaging means are disengaged.

3,825,974

APPARATUS FOR IMPREGNATING TEXTILE FIBERS

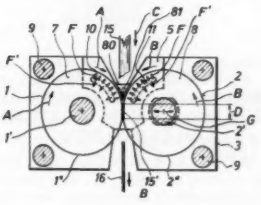
Werner Naegeli, Winterthur, Switzerland, assignor to Pavena AG, Basel, Switzerland

Continuation of Ser. No. 187,966, Oct. 12, 1971, abandoned. This application Apr. 2, 1973, Ser. No. 347,351

Claims priority, application Switzerland, Oct. 12, 1970, 15070/70

Int. Cl. D01b 3/04

U.S. Cl. 19—66 R **14 Claims**



An apparatus for continuously impregnating a throughpassing textile fiber arrangement with liquid, comprising a pair of discs rotatably supported in a machine frame and arranged with circumferential surfaces opposite to each other for throughpassing the fiber arrangement between said circumferential surfaces. Two cover plates are provided, each of which is laterally arranged at face sides of said pair of discs and having a surface opposite to said face sides of said pair of discs, said cover plates covering said face sides with a small clearance between said surface and said face sides and being located in the machine frame. The discs and the cover plates are arranged shiftable relative to each other, as viewed in the direction of axes of rotation of the discs, and openings are provided in the cover plates and arranged at a region of the cover plates opposite to said face sides of said pair of discs for supplying under pressure impregnating liquid to said face sides.

3,825,975

APPARATUS FOR FORMING A SLIVER FROM A FIBER WEB PRODUCED IN A CARD

Paul Staeheli, Wilen, Switzerland, assignor to Rieter Machine Works, Ltd., Winterthur, Switzerland

Continuation-in-part of Ser. No. 95,619, Dec. 7, 1970, abandoned. This application Jan. 15, 1973, Ser. No. 323,650

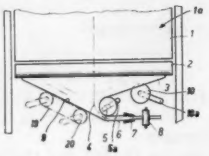
Claims priority, application Switzerland, Dec. 12, 1969, 18499/69; Nov. 19, 1970, 17167/70

Int. Cl. D01h 15/46

U.S. Cl. 19—150 **1 Claim**

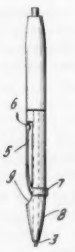
A method of forming a sliver from a fiber web produced in a card which comprises the steps of subjecting the formed web immediately after it is withdrawn to a precondensing action or preliminary condensation by laterally collecting the web towards the middle thereof, and subsequently condensing such web into a sliver by means of a known type of condensing device to essentially complete the formation. The invention also pertains to apparatus for forming a sliver in accordance with the aforesaid inventive method wherein a sliver condensing device is arranged after a web take-off device of the card, and between the web take-off device and the sliver condensing device there is provided movable precondensing

means in the form of at least one substantially cylindrical-type roller or having at least one substantially cylindrical circumferential precondensing surface disposed in a plane which is in



substantially perpendicular relationship with respect to the plane in which the web moves for forming a precondensed strand of fibers by laterally collecting the fiber web.

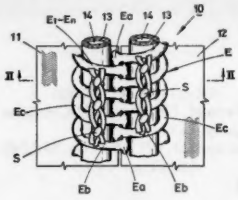
3,825,976
WRITING INSTRUMENT
Lou Moore, 400 Island Dr., Merrit Island, Fla. 32952
Filed Sept. 2, 1971, Ser. No. 177,333
Int. Cl. B43k *25/00*
U.S. Cl. 24—11 F **1 Claim**



There is described a writing instrument of the ball point type having a clip member extending away from the writing tip. The lower end of the instrument body has a recess into which the clip member is received when the instrument is used. In one version, the clip member consists of a spring ring to which is attached a clip and the instrument body is tapered to allow sliding of the ring and the clip in the recess. In another, the clip is integral with a plate displaceable on the feed element.

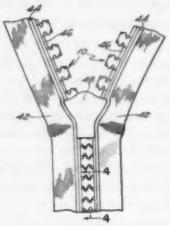
3,825,977
SLIDE FASTENER HAVING A FILLING CORE
Ikuno Takamatsu, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Oct. 31, 1973, Ser. No. 411,223
Claims priority, application Japan, Nov. 6, 1972, 47-128131
Int. Cl. A44b *19/12*
U.S. Cl. 24—205.1 C **4 Claims**

A slide fastener is provided with a reinforcing core or filler extending through a helical structure of a continuous row of fastener elements for stabilizing the position of the latter when sewn onto a carrier tape. The core or filler is a tubular struc-



ture designed to flexibly yield itself and fit snugly into the coil of each element.

3,825,978
ZIPPER CONSTRUCTION
Vytautas S. Sakalys, Providence, R.I., assignor to Brier Manufacturing Company, Providence, R.I.
Filed Mar. 13, 1972, Ser. No. 233,972
Int. Cl. A44b *19/06*
U.S. Cl. 24—205.13 R **4 Claims**

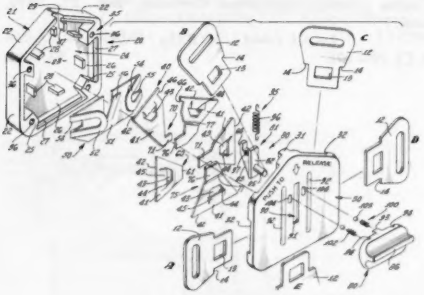


An ornamented plastic zipper construction comprising integrally molded plastic elements having front and rear portions with the side edges of the rear portion being undulated or of zigzag configuration whereby to define outwardly extending teeth and inwardly extending recesses, said teeth extending outwardly of the adjacent side edge of the front portion, and said recesses extending inwardly thereof, whereby when said zipper elements are interlocked, the teeth of one element extend into the recesses of the next-adjacent elements, the outermost portion of said teeth underlying the front portions of the adjacent elements whereby there is a simultaneous interlocking and overlapping between adjacent elements so as to resist pull-apart, shear, and flexural forces on the closed zipper. A further feature of the present invention resides in the fact that adjacent zipper elements, when interlocked, form a straight line with the abutting edges of adjacent elements in close adjacency to each other.

3,825,979
MULTIPLE POINT BUCKLE
Hans Jakob, Sherman Oaks, Calif., assignor to American Safety Equipment Corporation, Encino, Calif.
Continuation of Ser. No. 95,178, Dec. 4, 1970, abandoned.
This application June 26, 1972, Ser. No. 266,408
Int. Cl. A44b *11/25*
U.S. Cl. 24—205.19 **24 Claims**

A five-point buckle has five ratchets, each for lockingly receiving a respective connector on the end of any one of two shoulder belts, two lap belts, or a crotch belt, the end connectors being insertable into the buckle in random sequence, with the two shoulder belt ratchets having overlying tabs, and the crotch belt and left lap belt ratchets having overlying tabs ad-

jacent the overlying tabs of the shoulder belt ratchets, and with a slidable shoe adapted to sequentially engage and depress the adjacent sets of tabs upon manual movement of the shoe to thereby sequentially release first the shoulder belts simultaneously and then the left lap belt and crotch belt simul-



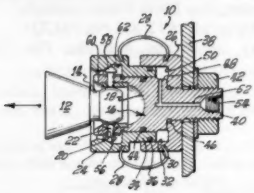
taneously from the buckle. Detents indicate the position of the shoe to permit release of the shoulder belts only, a spring biases the shoe to a non-tab engaging position, and a blocking plate may be inserted into the buckle to convert the five-point buckle to a four-point or three-point buckle.

3,825,980

RETAINING AND RELEASE ASSEMBLY

Daniel M. Moore, Glendora, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 17, 1972, Ser. No. 298,318
Int. Cl. A44b *11/25, 17/00*
U.S. Cl. 24—230 AN **8 Claims**



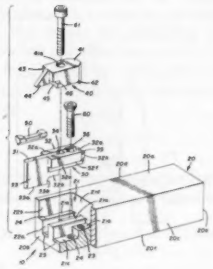
An apparatus for releasing an elongated body which has an annular recess near one end thereof including a piston means wherein one end of the piston means has a cavity for receiving the elongated body and its recess. The piston means has a plurality of openings into the cavity and a plurality of reciprocable elements are provided which are slidably disposed within the openings for retaining the body when the elements are depressed into the recess and for releasing the body when moved away from the recess. Cylinder means are disposed about the piston means and slidable between first and second positions relative to the piston means for retaining the elements depressed in the body recess when the cylinder means is in the first position and freeing the elements from the body recess when the cylinder means is in a second position. Spring means biases the cylinder means to the first position and a means is provided for applying a fluid pressure to the cylinder means for moving the cylinder means from the first position to the second position. With such an arrangement an applicaiton of fluid pressure to the cylinder means causes the elongated body to be released.

3,825,981

CARTRIDGE-TYPE CUTOFF AND GROOVING TOOL

Burton L. Cochran, North Canton, and William B. Stein, Barberton, both of Ohio, assignors to The Warner & Swasey Company, Cleveland, Ohio

Filed Nov. 13, 1972, Ser. No. 306,363
Int. Cl. B26d *1/00*
U.S. Cl. 29—96 **7 Claims**



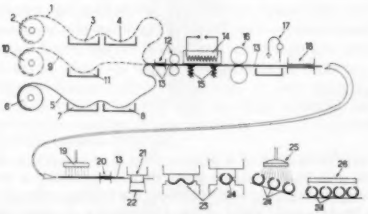
An improved cutoff or grooving tool of the cartridge type is disclosed, including a cartridge assembly which comprises a support member, a clamping member, and a cutting insert, all of which are receivable in one or more pockets opening into the front and top faces of an elongate tool-holder body. The support member is mounted in the pocket in such a way that it is drawn down and into the pocket to provide the maximum rigidity to the forces encountered in the operation of the instrument. The assembly is releasably received in the pocket so that the entire assembly can be readily and quickly removed for replacement due to damage, change of size of cut, etc., without the necessity of providing special tooling in most instances.

3,825,982

METHOD OF MAKING LOW FRICTION BEARINGS AND BEARINGS MADE THEREFROM

Pierre De Lacroix De Lavalette, Paris; Daniel Hein, Choisy-Le-Roi; Georges Boudet, Tours; Jean-Claude Meyer, Tours; Alain Neron, Tours; Alain Bianunier, Semblancay; Alain Blaiberg, Mettray; Jean Louis Nouveau, Noizay; Jacques Georges Charpentier, Tours, and Alain Jacquot, Tours, all of France, assignors to SKF Compagnie D'Applications Mecaniques, Clamart, France

Filed Jan. 12, 1973, Ser. No. 323,321
Claims priority, application France, Jan. 19, 1972, 72.01767
Int. Cl. B23p *11/00, 3/00;* **F16c** *33/28*
U.S. Cl. 29—149.5 NM **21 Claims**



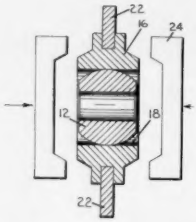
Bearing material comprises strip of cloth having upper surface of fluorocarbon resin threads and lower surface comprising metallic threads soldered to a metallic supporting strip. Fluorocarbon threads are embedded in a resin layer which is partially hardened before the material is cut and shaped, but completely hardened only after shaping has been completed.

3,825,983

METHOD FOR MANUFACTURING SPHERICAL BEARING ASSEMBLIES

Albert R. McCloskey, Fairfield, Conn., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Feb. 12, 1973, Ser. No. 331,500
Int. Cl. B23p *11/00*; B21d *53/10*
U.S. Cl. 29—149.5 B 1 Claim



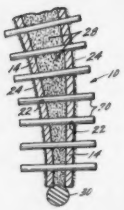
Method of manufacturing a spherical bearing assembly comprising the steps of expanding an outer race member into mechanical interlocking engagement with a machine element or apparatus, inserting a spherical ball within the so mechanically interlocked outer race member, deforming by use of the die means a portion of spherical outer race member around said ball to form an integral spherical bearing assembly.

3,825,984

METHOD FOR FABRICATING A HOLLOW BLADE

Peter J. Linko, and William D. Treece, both of Cincinnati, Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Mar. 2, 1972, Ser. No. 231,156
Int. Cl. B21k *3/04*; B23p *15/04*
U.S. Cl. 29—156.8 H 5 Claims



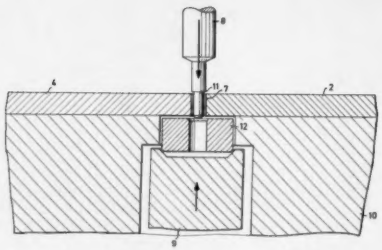
In the fabrication of a hollow fluid flow apparatus blade, such as a turbine blade or vane, there is provided a pair of spaced apart metallic walls defining the trailing edge portion of the blade airfoil, each of the walls having an inner and an outer surface. Each of the walls is perforated with a plurality of openings which are located from wall to wall in pairs of aligned openings. A pin is positioned through each pair of aligned openings while maintaining the walls in spaced apart relationship. Then the pins are joined to the walls through a metallic bond, one example of which is brazing through application of a brazing alloy to the wall outer surface.

3,825,985

DEVICE FOR INSULATEDLY ASSEMBLING A COMPONENT FOR ELECTRICALLY DRIVEN TIMEPIECES

Heinz Meitinger, Theodor-Heuss-Str. 16, D-7075 Mutlangen, Germany

Filed Dec. 15, 1972, Ser. No. 315,612
Claims priority, application Germany, Dec. 27, 1971, 2164677
Int. Cl. G04d *1/06*; B23p *11/02*
U.S. Cl. 29—178 9 Claims



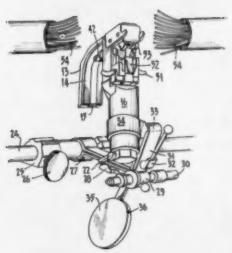
Device which allows to position an insulated roller on the staff of a balance wheel oscillator of a timepiece. The insulation itself is achieved by a small plate of plastic material which is formed into a tube-like part and is inserted into the hole of the aforementioned insulated roller by the help of the special tool.

3,825,986

CRIMPING TOOL

Walter Karl, Lugarno, New South Wales, Australia, assignor to Utilux Pty. Limited, New South Wales, Australia

Filed Dec. 27, 1972, Ser. No. 318,731
Claims priority, application Australia, Dec. 31, 1971, 2577/71
Int. Cl. H01r *43/04*
U.S. Cl. 29—203 DT 4 Claims



A crimping tool for use in crimping connectors on wires such as telephone cable wires in which the connectors are fed into engagement with a fixed anvil and the wires are thereafter positioned in the anvil and the connector crimped around the wires by means of a punch member. The anvil and punch have cooperating members which sever the unwanted ends of the wires and trim any excess insulation on the connector.

3,825,987

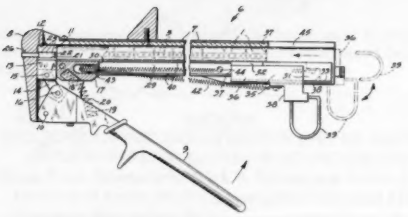
WIRE CONNECTOR PRESSER TOOL

Donald Tolman Smith, Norcross, Ga., and William Robert Spenninger, Morris Twp., Morris County, N.J., assignors to Western Electric Company Incorporated, New York, N.Y., by said Spenninger and Bell Telephone Laboratories, Incorporated, Murray Hill, N.J., by said Smith

Filed Apr. 9, 1973, Ser. No. 349,348

Int. Cl. H01r *43/04*; B23q *7/10*; B23p *17/00*

U.S. Cl. 29—203 H **12 Claims**



Plier-like tool, for compressing connectors about wires to be electrically connected, has toggle-operated presser and opposed anvil with a space therebetween to receive unpressed connectors from a magazine supply. A fixed gauge is provided on either side of the space, which gauge is separated from the anvil by a distance equal to the height of a properly pressed connector. Hinged plates, each with a series of spaced semicircular grooves adapted to register with apertures in the connector, are provided adjacent the fixed gauges, whereby wires laid in the grooves will automatically register with their respective apertures in the connector. The hinged plates pivot against the force of a spring to permit withdrawal of the pressed connector from the tool. The rear of the magazine has an open slot adapted to receive pressure-sensitive tape attached to a series of unpressed connectors, the connectors being loaded into the magazine by feeding the tape into the slot and then pulling the tape to strip it from the connectors.

3,825,988

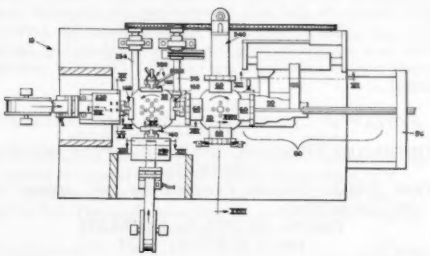
LATCH INSTALLATION MACHINE

Aldin Hardick; Delbert House, and Alvin M. Martin, all of Muskegon, Mich., assignors to Questor Corporation, Toledo, Ohio

Division of Ser. No. 153,941, June 17, 1970, Pat. No. 3,742,575. This application Feb. 21, 1973, Ser. No. 334,470

Int. Cl. B23p *19/04*

U.S. Cl. 29—208 R **38 Claims**



A pair of adjacent, rotating turrets are indexed to stop at various assembly stations, spaced circumferentially about each turret. Four ring holders are mounted on one turret for holding split rings. Four parts nests are mounted on the other turret for holding lock tabs and latches which are to be inserted into the rings. A ring loader is positioned at one work station adjacent the first turret for loading a piston ring onto a ring holder. Located at work stations adjacent the second turret are a lock tab loader and a latch loader for loading lock tabs and a latch, respectively, into a parts nest. The two turrets then share a common work station at which a ring holder and a parts nest are in alignment. At this point, a lifter pushes the lock tabs and latch out of the parts nest and into engagement with the ring whereby assembly of the ring and latch is facilitated. A ring unloader is located at yet another work station adjacent the first turret for unloading the completed rings. A clearing station is located at a work station adjacent the second turret for clearing the parts nest of any lock tabs and/or latch which might be left in the parts nest as a result of a defective assembly.

3,825,989

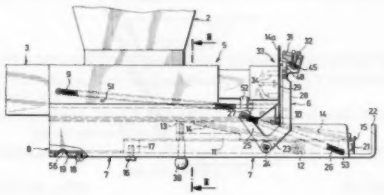
DEVICE FOR FASTENING IDENTIFICATION MEMBERS

Elmar Maier, Feldkirch-Tisis, Austria, assignor to Hilti Aktiengesellschaft

Filed Jan. 15, 1973, Ser. No. 323,816

Int. Cl. B23q *7/10*

U.S. Cl. 29—211 D **16 Claims**



In a device for fastening identification members, such as plates, to a hard receiving material by means of bolts, a bolt setting gun is mounted on a support frame for movement between a firing position where its muzzle is spaced from the receiving material and a fired position where the muzzle is located adjacent the receiving material. Supported from the gun is a storage element in which a plurality of identification members are held ready to be moved, one at a time, from an open end of the storage element to a location in front of the muzzle in the firing position. An angle lever pivotally attached to the storage element and moves the identification members from the storage element into position in front of the muzzle. The angle lever is spring biased into position for withdrawing an identification member from the storage element. The gun has a noze adjacent its muzzle and as the muzzle returns from the fired position to the firing position, the nose contacts the angle lever and pivots it, against the spring biasing action, so that an identification member is moved in front of the muzzle. When the gun is fired, the nose moves toward the receiving material and releases the angle lever. In its released condition, the angle lever, due to the spring biasing action, moves into position to pick up another identification member. Accordingly, during each firing cycle, as one identification member is fastened to the hard receiving material, another identification member is automatically moved in position in front of the muzzle of the gun.

3,825,990

SCALPEL IMPLEMENT

Donald F. Shields, 2541 Ramshorn Dr., Manasquan, N.J. 08736

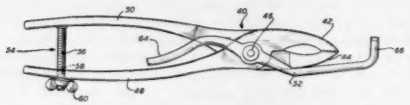
Filed July 26, 1972, Ser. No. 275,335

Int. Cl. B23p *19/04*

U.S. Cl. 29—268 **5 Claims**

A scalpel implement for removing a flexible, linearly slotted surgical blade mounted on a linear supporting key, the blade

having a cutting end and a heel, including means for gripping the cutting end of the surgical blade and means for applying



force to the heel of the blade to facilitate removal of the blade off of the linear supporting key.

3,825,991

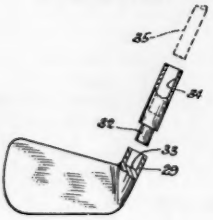
METHOD OF MAKING GOLF CLUB HEAD

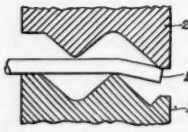
Alverin M. Cornell, Hinsdale, Ill., assignor to Cornell Forge Company, Chicago, Ill.

Continuation-in-part of Ser. No. 169,942, Aug. 9, 1971, abandoned. This application Jan. 29, 1973, Ser. No. 327,575

Int. Cl. B23p *17/00*

U.S. Cl. 29—412 **5 Claims**





A golf club iron head is made in two pieces instead of as a single piece forging in order to make possible appreciable economies in the forging of the head. The partition is made in the hosel, a short stub next to the blade of the club being made as a forging integrally with the blade and the remainder of the hosel being machined from a bar with an automatic screw machine. Alternatively the remainder of the hosel can be made from tubing suitably finished and cut off to length. The two parts are united by a permanent bonding procedure to form a substantially "standard" iron club head.

3,825,992

METHOD OF MAKING AN ECCENTRIC FLEXURAL PIVOT

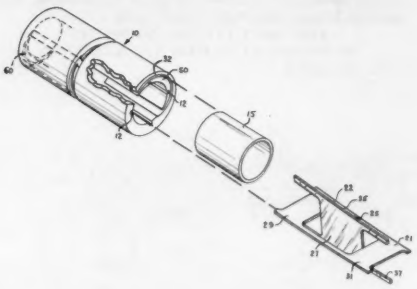
Henry Troeger, Cooperstown, N.Y., assignor to The Bendix Corporation, Teterboro, N.J.

Filed Sept. 8, 1972, Ser. No. 287,298

Int. Cl. B23p *11/00*

U.S. Cl. 29—436 **9 Claims**

The method of manufacturing a flexural pivot device comprising the sequential steps of forming a cylindrical housing, milling (such as by electrochemical or electrical discharge means) two diagonally-opposite arcuate annular spaces eccentric to the axis of the housing at each end of the housing thereby forming diametrically opposed and overlapping inwardly-projecting eccentric arcuate structure, forming a plurality of resilient members, assembling the resilient members within the housing and securing the resilient members thereto, and cutting a circumferential groove in the housing coincident



with the overlapping arcuate structure so that limited relative rotation of one arcuate structure relative to the other may occur upon flexing of the resilient means.

3,825,993

METHOD OF PROVIDING ARTICLE FROM CLAD ALUMINUM BASE ALLOY

Michael K. McGinnis, Lower Burrell, and Paul F. Wallace, New Kensington, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Division of Ser. No. 147,624, May 27, 1971, abandoned, which is a continuation of Ser. No. 787,523, Dec. 27, 1968, abandoned. This application July 6, 1972, Ser. No. 269,475

Int. Cl. B23k *31/02*

U.S. Cl. 29—472.9 **2 Claims**

A composite clad sheet product made up of an aluminum base alloy containing about 2.5 to 6% zinc, about 0.4 to 3% magnesium, about 0.2 to 1% manganese, and balance essentially aluminum, clad with a magnesium-free aluminum base alloy containing about 0.5 to 1.8% manganese. The product may have an outside porcelain enamel finish and an inside cured organic resin finish and be in the form of a cooking utensil.

3,825,994

METHOD OF SOLDERING CIRCUIT COMPONENTS TO A SUBSTRATE

Clyde Franklin Coleman, Crawfordsville, Ind., assignor to RCA Corporation

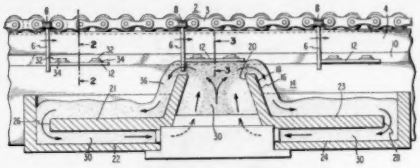
Filed Nov. 15, 1972, Ser. No. 306,839

Int. Cl. B23k *31/02, 35/24*

U.S. Cl. 29—498 **6 Claims**

A method of batch soldering components of hybrid circuits to substrates comprising advancing the substrates having mounted thereon solder paste layers or preforms on which the components are resting in unsoldered state, along a path which leads through a wave of hot, dense liquid, such that the

substrates float free on the liquid wave for a period long enough to melt the solder paste or preform, and then moving



the substrates out of contact with the liquid wave to cool the assemblies which now have the components soldered down to them.

3,825,995

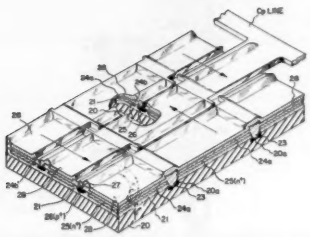
DIELECTRIC STRIP ISOLATION FOR JFET OR MESFET DEPLETION-MODE BUCKET-BRIGADE CIRCUIT

Bruno Kurz, Schenectady; Mark B. Barron, and Walter J. Butler, both of Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 295,835, Oct. 10, 1972, Pat. No. 3,784,847. This application Sept. 27, 1973, Ser. No. 401,200

Int. Cl. B01j *17/00*

U.S. Cl. 29—571 **6 Claims**



Undesired coupling of JFET or MESFET bucket-brigade stages through the epitaxial layer in a monolithic integrated bucket-brigade circuit is prevented by isolating adjacent stages by strips of thick oxide dielectric material such as SiO_2. The dielectric strips are formed by selective oxidation to obtain local conversion of the n-type silicon epitaxial layer to SiO_2. In a second embodiment, elongated spaced-apart mesas of the SiO_2 are formed on the substrate prior to forming the patterned n-type silicon epitaxial layer. The storage capacitors of the bucket-brigade stages are MOS devices formed by metal layers overlapping the drain electrode regions of the JFETs or MESFETs diffused in the epitaxial layer with the dielectric material being a SiO_2 layer therebetween.

3,825,996

GATE-DIFFUSION ISOLATION FOR JFET DEPLETION-MODE BUCKET BRIGADE CIRCUIT

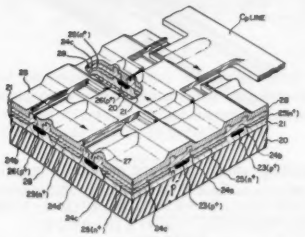
Mark B. Barron, and Walter J. Butler, both of Scotia, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 295,872, Oct. 10, 1972, Pat. No. 3,790,825. This application Sept. 27, 1973, Ser. No. 401,201

Int. Cl. B01j *17/00*

U.S. Cl. 29—571 **2 Claims**

Undesired coupling of JFET bucket-brigade stages through the epitaxial layer in a monolithic integrated bucket-brigade circuit is prevented by isolation diffusion regions formed in the epitaxial layer along the two sides of a row of bucket-brigade stages. The isolation diffusion regions are slightly spaced from the JFET gate diffused regions and reverse-biased so that depletion regions extend down to the substrate. The close spacing of the gate and isolation diffusion regions results in the gate and isolation depletion regions joining upon



application of voltage to the gate to pinch off the transistor. The storage capacitors of the bucket-brigade stages are MOS devices formed by metal layers overlapping the JFET drain electrode regions diffused in the epitaxial layer with the capacitor dielectric being a dielectric layer therebetween.

3,825,997

METHOD FOR MAKING SEMICONDUCTOR DEVICE

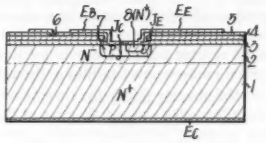
Kinji Wakamiya, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Division of Ser. No. 77,282, Oct. 1, 1970, abandoned. This application May 22, 1972, Ser. No. 255,328

Claims priority, application Japan, Oct. 2, 1969, 44-78785

Int. Cl. B01j *17/00*

U.S. Cl. 29—578 **8 Claims**



A method for constructing planar type semiconductor devices in which PN junctions of the device are exposed through an opening formed in a first insulating layer on the surface of the device and is then covered with a low resistivity polycrystalline semiconductor layer which is then covered with a second insulating layer such that voltage may be applied to the polycrystalline layer to provide a planar semiconductor substrate which has high break-down voltage.

3,825,998

METHOD FOR PRODUCING DIELECTRICALLY COATED WAVEGUIDES FOR THE $H_{o,1}$ WAVE

Helmut Oberbeck, Backnang, Germany, assignor to LICENTIA Patent-Verwaltungs-G.m.b.H., Frankfort am Main, Germany

Filed Dec. 27, 1972, Ser. No. 318,936

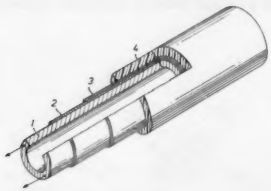
Claims priority, application Germany, Dec. 30, 1971, 2165553

Int. Cl. H01p *11/00*

U.S. Cl. 29—600 **4 Claims**

A waveguide for transmitting $H_{o,1}$ waves is produced by applying a separating layer to the cylindrical outer surface of a steel mandrel; applying a copper coating to the separating layer; applying a layer of glass saturated with self-hardening

plastic to the copper layer; causing the glass fibers to form a bond with the copper layer; removing the steel mandrel thus



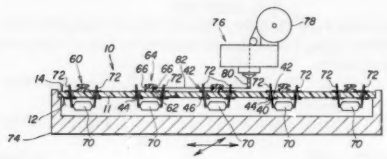
leaving a resulting tubular structure; and applying a dielectric layer to the interior surface of the resulting tubular structure.

3,825,999

METHOD OF CONNECTING ELECTRICAL COMPONENT

Ulyss Ray Rubey, Lewisville, Tex., assignor to United Wiring and Manufacturing Co., Inc., Garland, Tex.

Filed Dec. 26, 1972, Ser. No. 318,589
Int. Cl. H05k *3/32*
U.S. Cl. 29—626 **14 Claims**



A circuit board employs solder pads plated onto the reverse side of an insulative board in an orthogonal array and connected to aligned conductive areas on the obverse side by plated-through holes. Wire guides including upstanding fingers mount on the reverse side of the board with conductive pins from electrical components extending through the holes in the board from the obverse side to the reverse side.

Insulated wire is threaded around the pins of the electrical components and guide in accordance with a predetermined pattern of component interconnections. For interconnections between points on the board, wire is threaded substantially orthogonally. Where wire is to be severed, it is threaded angularly relative to the orthogonal array. After wire threading, the wire is selectively soldered to contact areas while evaporating locally the insulation thereon and component pins are soldered in plated-through holes. All angularly arrayed segments of the wire are cut and loose portions removed leaving only wire segments which form desired interconnections.

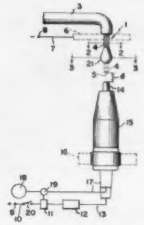
3,826,000

TERMINATING OF ELECTRICAL CONDUCTORS

Gideon A. Du Rocher, and Ellsworth S. Miller, both of Mt. Clemens, Mich., assignors to Essex International, Inc., Ft. Wayne, Ind.

Filed May 18, 1972, Ser. No. 254,530
Int. Cl. H01r *9/00*
U.S. Cl. 29—630 R **23 Claims**

Terminating of a metallic, electrical conductor is accomplished by heating an end of the conductor until the metal becomes molten and forms a homogeneous mass followed by cooling and solidification of the mass and subsequent shaping of the mass, if desired, to form a terminal having any one of a number of different configurations. That end of the conductor which is to be terminated preferably is supported in a vertical plane with the free end of the conductor lowermost whereupon the surface tension of the molten metal causes the latter to form a pear-shaped enlargement or nodule tapering toward the opposite end of the conductor. Heating of the conductor



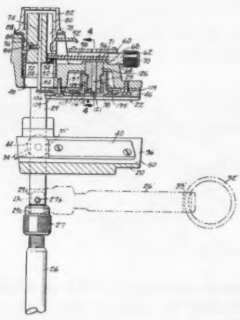
preferably occurs in an inert atmosphere to prevent oxidation of the molten metal.

3,826,001

CABLE STRIPPING TOOL

Robert A. Bilbrey, Orinda, and Walter J. Maytham, Los Altos, both of Calif., assignors to Speed Systems, Inc., Los Altos, Calif.

Filed Apr. 30, 1973, Ser. No. 355,957
Int. Cl. H02g *1/12*
U.S. Cl. 30—90.1 **16 Claims**



A tool for removing insulation from cables includes a means for supporting cables of differing diameters in the tool while permitting rotation of the tool relative to the cable. The tool includes a main insulation cutting blade whose depth of cut may be selectively varied and whose angular disposition relative to the cable may be selectively changed so the blade will cut a track through the insulation without the application of any axial pressure. The tool further has a scribing blade whose depth of cut and disposition may also be varied for scribing portions of the insulation known as the semiconductor layer. Means are also provided for rendering one of the blades inoperative when the other is being used.

3,826,002

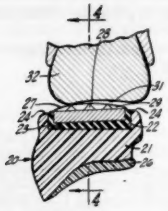
DENTURES AND TEETH FOR DENTURES AND METHODS OF MAKING THE SAME

Henry H. Faust, 319 E. First St., and Peter J. Faust, 1800 Rickety Ln., both of Tyler, Tex. 75701

Filed Sept. 22, 1972, Ser. No. 291,300
Int. Cl. A61c *13/00*
U.S. Cl. 32—2 **16 Claims**

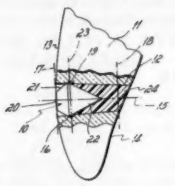
Teeth for dentures having shock absorbing and cushioning agents incorporated therein and dentures made from such teeth, providing a yieldable resilient cushioning support for a hard occlusal biting surface on the teeth for minimizing the

shocks of chewing and preventing or relieving destruction of underlying tissues and bone formations beneath the dentures. The posterior teeth are formed with a resiliently mounted



movable hard occlusal surface which yields under biting pressure to stablilize the denture plate base and prevent shifting thereof from proper centric position on the support ridges of the mouth of the wearer.

3,826,003
FALSE TOOTH CONSTRUCTION
Raymond Thenot, Hamilton, Ohio, assignor to Bales Jewelry, Inc., Fairfield, Ohio
Filed Mar. 12, 1973, Ser. No. 340,093
Int. Cl. A61c *13/00*
U.S. Cl. 32—8 **2 Claims**

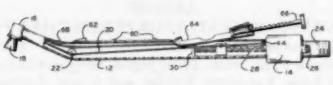


A false tooth construction that incorporates a jewel in combination with the tooth. The tooth is provided with a hole therethrough from the tooth's front face to the tooth's rear face, the hole having a cross-sectional configuration that generally conforms with the peripheral configuration of the jewel's girdle. An annular recess, concentric with the hole, is provided interiorly of the tooth adjacent the front face thereof. The jewel's girdle is seated in the annular recess, the jewel's table thereby being located substantially flush with the tooth's front face since the recess is adjacent the front face. A clear filler material is used to fill up the hole in the tooth between the jewel and the tooth's rear face once the jewel is seated in the annular recess. This mechanically locks the jewel in its recess because the hole's cross-sectional area lessens throughout its axial length from the tooth's front face to the tooth's rear face. Further, the clear filler allows light to pass through the jewel for giving it visual brilliance

---

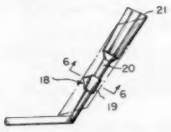
3,826,004
DENTAL PROPHYLAXIS INSTRUMENT
Joseph A. Graceffo, 60 Cayuga St., Seneca Falls, N.Y. 13148
Filed Apr. 17, 1972, Ser. No. 244,546
Int. Cl. A61c *3/06*
U.S. Cl. 32—58 **16 Claims**

A dental handpiece for cleaning teeth by means of cleaning paste carried by a flexible cup to which rotary motion is imparted by structure entirely within the handpiece. In the disclosed embodiment, a small rotor is powered by the available compressed air supply and the cup is secured to the rotor for rotation thereby. Reciprocal rotary motion is preferably imparted to the cup, again by structure entirely within the handpiece. Several embodiments of detachable cups are disclosed, all of which may be removed and replaced without handling



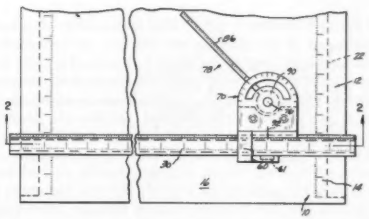
the rotor, and mechanism may also be provided for feeding the cleaning paste directly from a dispenser into the cup from the inside. The actuating member controlling on-off operation is also conveniently located on the handpiece.

3,826,005
DENTAL MIRROR APPARATUS FOR HOLDING EXPENDABLE DEMISTING SLEEVES
Ronald P. Spinello, 372 Post Ave., Westbury, N.Y. 11590
Filed Mar. 23, 1973, Ser. No. 344,271
Int. Cl. A61c *3/00*
U.S. Cl. 32—69 **6 Claims**



There is disclosed a dental mirror assembly which is adapted to receive and securely position expendable demisting sleeves which are adapted to be slid downwardly over the handle to a point of contact with the mirror surface. The narrow stem portion by means of which the mirror head is attached to the thicker handle portion, has attached thereto a sleeve-deforming member which projects radially outwardly from the stem to distort the surrounding sleeve into an oval configuration for frictionally securing the sleeve against both rotation and sliding movement.

3,826,006
TRI-SQUARE DRAWING BOARD
Eugene Rushin, 3988 Sheridan, Detroit, Mich. 48214
Continuation-in-part of Ser. No. 143,212, May 13, 1971, abandoned. This application Sept. 18, 1973, Ser. No. 398,307
Int. Cl. B43l *13/02*
U.S. Cl. 33—76 R **6 Claims**



This invention relates to new drawing board apparatus and drafting tools. A straight edge member slides within slots along the sides of a drawing board and is held in position selectively by magnets. The slideable member slides along the straight edge. A magnet holds this slideable member in position along the straight edge. A protractor is attached to the slideable

member. An arm is rotated on the center of the protractor and held in place by magnets. Scales are provided on the drawing board, straight edge, and arms for measurement and drafting.

3,826,007

DRAWING APPARATUS FOR PERSPECTIVE VIEWS

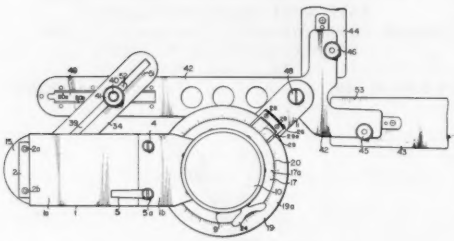
Haruzo Senshu; Masao Koenuma, both of Tokyo, and Yoshitaka Gibu, Niiza, all of Japan, assignors to Fuji Sokuryoki Seizo Kabushiki Kaisha and Yugen Kaisha Senshu Sekkei Jimusho, both of Tokyo, Japan

Filed Aug. 29, 1973, Ser. No. 392,626

Claims priority, application Japan, Sept. 2, 1972, 47-102530

Int. Cl. B43l *13/14*

U.S. Cl. 33—77 **5 Claims**



A drawing apparatus for preparing perspective views is described herein which includes a mechanism for adjusting the position of a straight edge to draw perspective lines having vanishing points throughout the range of from zero to infinity. In addition, a combination of mechanisms is disclosed for moving the straight edge to various positions on a drawing surface to draw perspective lines having a single vanishing point.

3,826,008

SNAP SLIDE CALIPERS

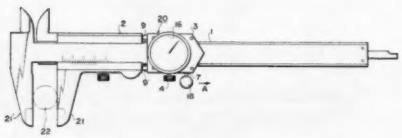
Shingo Nishina, 1-128, Sakado, Kawasaki, Japan

Filed Apr. 2, 1973, Ser. No. 346,873

Claims priority, application Japan, Apr. 8, 1972, 47-41810

Int. Cl. G01b *5/02*

U.S. Cl. 33—147 F **5 Claims**



Repeated measurements of similar values with rapid speed are achieved by link means connecting a rigid frame freely mounted to slide on the bar of a caliper and a vernier plate slider, screw means which sets the position of the rigid frame on the bar of the caliper, means which resiliently biases the vernier plate slider away from the rigid frame and reading means actuated by relative movement between said frame and vernier plate slider.

3,826,009

LENGTH GAUGING APPARATUS

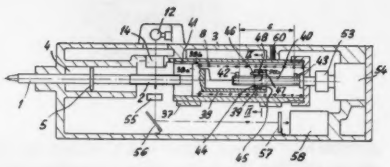
Johann Meier, Casa Clarissa CH-6645, Brione Spora Minusio, Switzerland

Filed Dec. 30, 1971, Ser. No. 214,255

Claims priority, application Switzerland, Jan. 28, 1971, 1295/71

Int. Cl. G01b *5/20*

U.S. Cl. 33—169 R **6 Claims**



The invention relates to a length gauging apparatus of the type in which a gauge pin is displaceable in its longitudinal direction and has a scale or grid connected to it, and involve the concept of pneumatically cushioning the gauge pin to prevent an unwanted displacement speed when displaced in the direction of measurement.

3,826,010

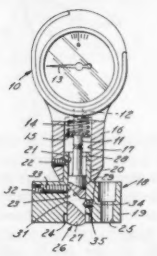
ADJUSTABLE INDICATOR GAGING UNIT

James Finley, Livonia, Mich., assignor to Hanlo Gage and Engineering Company, Detroit, Mich.

Filed Feb. 28, 1973, Ser. No. 336,430

Int. Cl. G01b *3/22*

U.S. Cl. 33—169 R **4 Claims**



An indicator gaging unit having a body member with a mounting shaft at its upper end for operative attachment to an indicator gage. A vertical bore is formed through the body member and the mounting shaft. A gage pin is slidably mounted in said bore and has an upper end adapted for operative engagement by an indicator stem and a lower end adapted for operative engagement with a workpiece. The gage pin is provided with an angular bore therethrough which is disposed at an acute angle relative to the longitudinal axis of the gage pin. A pair of set screws are mounted transverse to the longitudinal axis of the gage pin and have cone ends which operatively engage the angular surface of said angular bore for adjusting the longitudinal movement of the gage pin.

3,826,011

PRE-SETTING TOOL GAUGE FOR SPINDLE MACHINES

Liborio Lee D'Aniello, 627 Tunxis Hill Rd., Fairfield, Conn.

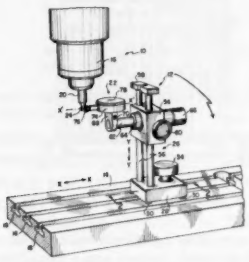
Filed Jan. 5, 1973, Ser. No. 321,146

Int. Cl. B27g *23/00*

U.S. Cl. 33—185 R **7 Claims**

Apparatus and method for locating the true rotational axis of a spindle on a machine and for setting the tool cutting

radius therefrom particularly where interchangeability and expedient use is desired on many different machines. The apparatus includes simplified fastening means which provides for immediate alignment along a coordinate axis of any machine having a mounting table with standard T-slots. A gauge probe and a measurement indicator are interfaced along the coordinate axis to measure spindle eccentricities therealong. The



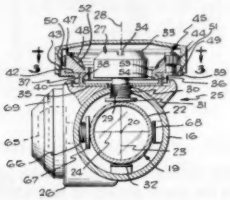
indicator is adapted with a specially configured pickup to compensate for interfacing misalignments along the coordinate axis. Positional adjustments for the indicator are provided by which the interface and/or reference settings may be established without disturbing the table settings of the machine. By setting the cutting radius after the tool is secured in the spindle, the method achieves precision with a single apparatus setup.

3,826,012

DIRECT READING GUN SIGHT ADJUSTMENT

Frank A. Pachmayr, 2845 Medill Pl., Los Angeles, Calif. 90064

Filed Dec. 28, 1971, Ser. No. 212,929
Int. Cl. F41g *1/16, 1/38, 11/00*
U.S. Cl. 33—246 **12 Claims**



A gun sight which is adjustable to introduce a variable 'elevation' correction into the sighting of a target, and which has a scale or scales reading directly in terms of the proper gun to target distance for any particular setting of the sight.

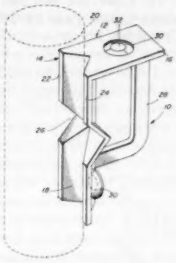
3,826,013

COMBINED LEVEL, SQUARE AND PLUMB TOOL

Bernard H. Baher, 52 E. High St., Avon, Mass. 02322

Filed Dec. 13, 1972, Ser. No. 314,715
Int. Cl. G01c *9/28, 9/36*
U.S. Cl. 33—390 **3 Claims**

A measuring instrument is disclosed to level, square and plumb adjacent and opposite surfaces of cylindrical, curved, inclined and planar shaped objects. A body member having right-angular arms with mutually perpendicular included-angle grooves for accommodating the contacted object surfaces being measured is an embodiment of the invention. Means to indicate the degree of level in the horizontal and vertical planes throughout 360° are provided in each arm and include liquid or "bulls-eye" target vials. Alternatively, a single



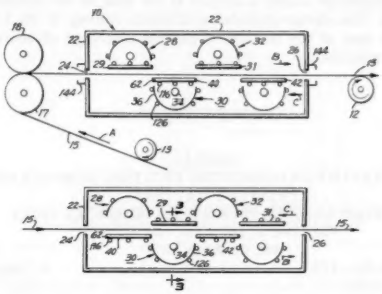
level means may be utilized in either right-angular arm member.

3,826,014

SHUTTER MECHANISM FOR RADIATION-CURING LAMP

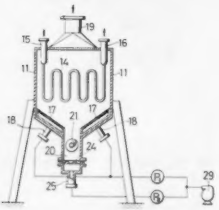
Norman A. Helding, Chicago, Ill., assignor to Sun Chemical Corporation, New York, N.Y.

Filed Mar. 19, 1973, Ser. No. 342,816
Int. Cl. F26b *3/34*
U.S. Cl. 34—1 **25 Claims**



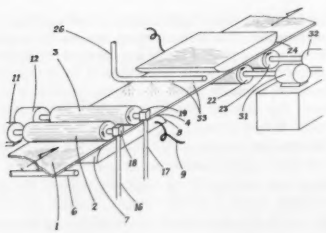
Apparatus for ultra-violet light curing of solvent-free ink by photopolymerization. The web carrying the ink to be cured is conveyed along a feed path. Lamps are arrayed along the feed path. A reflector behind each lamp directs radiation toward the web. In front of each lamp is a light absorbing shutter. When closed, the shutter blocks radiation from impinging upon the web. When opened, that shutter unblocks its own reflector. Means are provided for moving the shutters from their open to their closed positions. In one form of the invention, the lamps are arrayed along opposite sides of the web. In this embodiment, when a shutter opens, it not only unblocks its own reflector, but it also moves to a position opposed to the reflector of the neighboring lamp on the other side of the conveyor, whereby illumination from that lamp which passes the web impinges upon the open shutter. Means are also provided for opening the housings in which the lamps are contained and for shutting the housings. Air duct means are also provided in the lamp and reflector housings for cooling the lamp terminals and drawing off ozone and heated gases in the vicinity of the lamps.

3,826,015
DEVICE FOR CONTINUOUS COOLING OF HOT POWDER
Shigefumi Kuroyama; Masaki Kaneda, and Hiroshi Tamura, all of Yokohama, Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan
Filed May 24, 1973, Ser. No. 363,586
Claims priority, application Japan, June 13, 1972, 58196-47
Int. Cl. F26b *17/10*
U.S. Cl. 34—57 R **6 Claims**



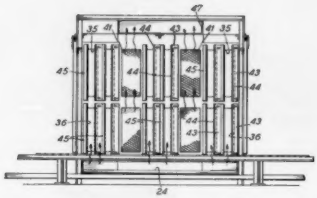
In cooling a hot powder containing coarse grains or lumps by a fluidizing method, the course grains or lumps spontaneously accumulate at the bottom portion of the fluidizing device in use and impede the fluidization of the powder, making it necessary to remove the accumulated coarse grains or lumps from the device. This invention provides an improved device wherein the bottom is inclined and a groove incorporating a rotary screw and having at one end thereof a coarse grain discharge means is formed at the base of the inclined bottom. This device provides continuous cooling of the hot powder and at the same time permits discharge of coarse grains or lumps.

3,826,016
APPARATUS FOR IMPROVING PRINTING SURFACE OF PRINTING MATERIAL
James Kagey Anderson, 924 Exmoor, Louisville, Ky. 40223
Filed Dec. 6, 1972, Ser. No. 312,561
Int. Cl. B24b *39/00*
U.S. Cl. 34—152 **6 Claims**



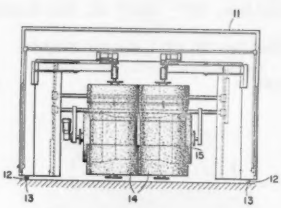
An apparatus for improving the printing surface of a sheet of printing material including means to apply moisture and means to compress the sheet of material against a smooth heated surface.

3,826,017
HEATING SYSTEM
Robert E. Kostur, 11 Brighten Ln., Oak Brook, Ill. 60521
Filed July 27, 1972, Ser. No. 275,558
Int. Cl. F26b *25/06*
U.S. Cl. 34—225 **1 Claim**



Shrink wrap apparatus includes a heating chamber, an air heater mounted alongside thereof and a forced air recirculation system for blowing hot air into the bottom of said chamber and extracting cool air from the top.

3,826,018
VEHICLE WASHER
Shigeyoshi Koketsu, Fujinomiya, Japan, assignor to Yasui Sangyo Company Limited, Shizuoka-ken, Japan
Filed Feb. 9, 1973, Ser. No. 331,063
Int. Cl. F26b *19/00*
U.S. Cl. 34—229 **6 Claims**

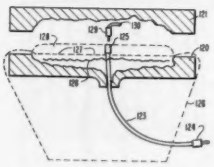


A vehicle washer having a top nozzle adapted to inject a flow of air against the upper surface of the vehicle body. The top nozzle is automatically adjusted in position relative to the configuration and height of the upper surface of the vehicle body.

3,826,019
DYNAMIC CHILDBIRTH SIMULATOR FOR TEACHING MATERNITY PATIENT CARE
Charles F. Knapp, and George S. Eades, both of Lexington, Ky., assignors to University of Kentucky Research Foundation, Lexington, Ky.
Division of Ser. No. 308,542, Nov. 21, 1972. This application Nov. 5, 1973, Ser. No. 412,757
Int. Cl. G09b *23/32*
U.S. Cl. 35—17 **3 Claims**

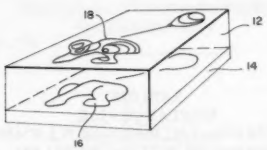
A programmable patient simulator for teaching maternity patient care includes a life size manikin with a pelvis, vaginal canal, uterus, placenta, umbilical cord, and a fetal doll from which heart sounds are emitted. A programmable electropneumatic system controls the simulated uterine contractions, position of the uterus, rupture of membranes, expulsion of

fetal doll, and fetal heart rate during labor and delivery sequence. The invention described herein was made in the



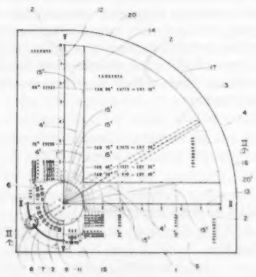
course of work under a grant or award from the Department of Health, Education and Welfare.

3,826,020
DEVICE FOR TEACHING SCULPTURING
Joseph Zutz, 1447 S. Holt Ave., Los Angeles, Calif. 90035
Filed Sept. 24, 1970, Ser. No. 75,004
Int. Cl. G09b *19/10*
U.S. Cl. 35—26 **6 Claims**



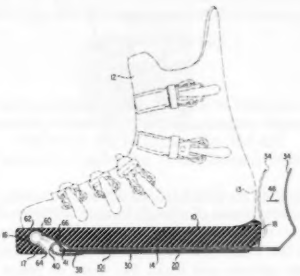
A device for teaching sculpturing including a block of material on plural surfaces of which are printed topographical representations of a figure to be sculpted; the topographical representation is in the form of areas having the projected shape of portions of the figure at particular elevations from a datum, with the areas representing the same elevation having similar indicating means, such as numbers, letters or colors. A set of sculpturing tools is provided, with a coding indication correlated to the indicating means on the areas of the block.

3,826,021
DEVICE FOR DEMONSTRATING AND CALCULATING TRIGONOMETRIC FUNCTIONS
Joseph D. De Andrea, 349 S. Aiken Ave., Pittsburgh, Pa. 15232
Filed June 14, 1973, Ser. No. 369,915
Int. Cl. G09b *23/04*
U.S. Cl. 35—34 **8 Claims**



A device for demonstrating and calculating trigonometric functions comprising a planar member having a unit circle inscribed thereon and an angular scale associated therewith to indicate the angle of an arc measured thereon. The planar member also includes a vertically extending, ordinate corridor, defined by the ordinate axis and tangent line and a horizontally extending, abscissa corridor defined by the abscissa axis and cotangent line. The corridors extend outwardly from the unit circle and have numerical indicia associated therewith, linearly calibrated along said corridors wherein the radius of the unit circle is the value 1. A transparent cursor member having a radius vector hairline is pivotally mounted at the origin of the unit circle with the hairline passing through the origin and extending a length at least as great as that of said corridors. The tangent, contangent, secant and cosecant functions for a given angle inscribed by the radius vector hairline within the unit circle may be demonstrated and calculated by visual observation of the radius vector hairline as it is moved within the corridors. The numerical values for the tangent, cotangent, secant and cosecant functions are determined by the points of intersection of the radius vector hairline with the tangent and cotangent lines and the corresponding numerical indicia associated therewith. A further embodiment of my invention is disclosed wherein the planar member also includes means for indicating sine and cosine functions within the unit circle to permit the demonstration and calculation of all of the trigonometric functions on a single device.

3,826,022
SKI BOOT CLEANING DEVICE
Joseph Leonard Grzech, 16 Cornhollow Rd., Roxbury Twp., N.J. 07876
Filed Oct. 24, 1973, Ser. No. 409,267
Int. Cl. A43b *00/00*
U.S. Cl. 36—2.5 AL **13 Claims**

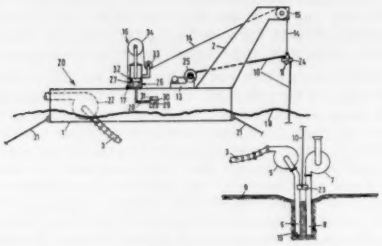


Apparatus for cleaning foreign substances such as snow and ice from the sole of a ski boot includes a track mounted within a groove in the sole. A slider having a scraper on one end thereof and a handle on the other end thereof is slideably mounted in the track. The slider can be moved through the track by the handle thereby moving the scraper along the sole of the boot to remove the foreign substances therefrom. The track, slider and scraper can be recessed below the surface of the sole when not in use.

3,826,023
WAVE MOTION COMPENSATING ASSEMBLY FOR SUCTION DREDGER
Jan De Koning, 20, Soetendaal, Amsterdam, and Romke Van Der Veen, Prof. Dr. Hesselaan 21, Jutphaas, both of Netherlands
Filed Jan. 29, 1973, Ser. No. 327,875
Claims priority, application Netherlands, Jan. 28, 1972, 7201216
Int. Cl. E02f *3/90*; **B66d** *1/50*
U.S. Cl. 37—58 **13 Claims**

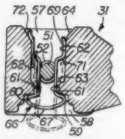
A Suction dredger, comprising a vessel and a conduit suspended on the vessel by means of at least one lifting cable

guided over a guide pulley beared in a support, the lifting cable being connected via a dashing compensator comprising a cable length variator with a winch mounted on the vessel is improved for considerably reducing the wear of the expensive



lifting cable. To this aim the support of the guide pulley of the lifting cable is suspended on the vessel by means of a support cable connected to the vessel through the cable length variator.

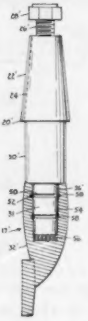
3,826,024
EXCAVATOR TOOTH, HOLDER AND RETAINER
Gerald Alger Petersen, Chemin des Salles Villa Pengopia, 06 Vence, France
Continuation-in-part of Ser. No. 215,739, Jan. 6, 1972, Pat. No. 3,751,834. This application Feb. 6, 1973, Ser. No. 330,050
Int. Cl. E02f 9/28
U.S. Cl. 37—142 A **6 Claims**



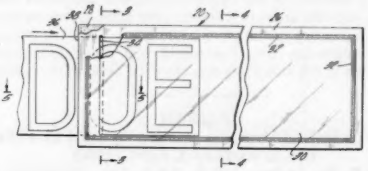
An excavating tooth holder has a recess receiving the proximal, non-circular end of a tooth formed wth a groove to provide a circular spindle forward of a shoulder. A staple-shaped retainer in the holder has an inwardly disposed stretch which fits into the groove and locks the tooth in place when the retainer is operative. When the retainer is retracted, the inward stretch is lifted from the groove, permitting the tooth to be removed. The shape of the retainer and the opening in the holder in which it fits permit lifting of retainer with removal of the retainer from the holder.

3,826,025
GROUND ENGAGING UNIT FOR BALLAST TAMPING MACHINES
William A. Elliott, 8020 S.W. Mapleleaf, Portland, Oreg. 97223
Continuation-in-part of Ser. No. 23,953, March 30, 1970, abandoned. This application Dec. 11, 1972, Ser. No. 313,932
Int. Cl. E02f 9/28
U.S. Cl. 37—142 R **2 Claims**

The ground engaging unit of the invention includes a stem or shaft having an upper tapered portion for connection to a supporting arm of a tamping machine and also having a lower shouldered tapered portion for receiving a replaceable shoe. The shoe has a top opening socket and a lower blade portion. The socket in the shoe is tapered inwardly toward its lower end for receiving the lower tapered portion of the stem. In a first embodiment, the socket receives the stem in a wedging fit. In another embodiment, the stem and socket are held together by a thermoplastic adhesive. Horizontal aligned grooves are provided in the stem and socket of the second embodiment and excess adhesive gathers therein to form connecting rings when hardened.



3,826,026
DISPLAY DEVICE
Brian Bevan, 356 Gilbert St., Ridgewood, N.J. 07450
Filed Sept. 25, 1972, Ser. No. 291,591
Int. Cl. G09f 3/18
U.S. Cl. 40—10 B **3 Claims**

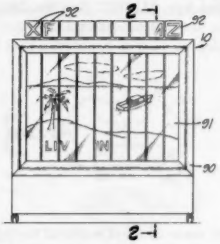


A display sign which has a plurality of endless strings of an automobile, bus, truck and the like including a mounting sheet and a transparent sheet heat-sealed to each other. The mounting sheet includes magnetic means for detachably securing the display device to any metallic surface such as that of a vehicle, door or metallic surface of a building. The mounting sheet also is provided with a slot bearing for insertion or removal of an indicia sheet which may be visually observed through the face sheet.

3,826,027
MULTI-FACED DISPLAY SIGN
Pieter Abbema, 6562 E. Bayberry St., Agoura, Calif. 9130
Filed Nov. 3, 1972, Ser. No. 303,533
Int. Cl. G09f 11/02
U.S. Cl. 40—32 **8 Claims**

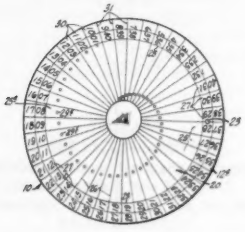
A display sign which has a plurality of endless strings of planar elements. An element of one string cooperates with corresponding elements of the strings to form an advertising or other display panel when such elements are placed side by

side in a common frontal plane. The strings of elements are supported by vertically disposed shafts which are



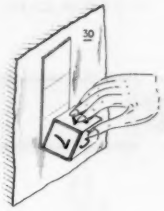
synchronously rotated to bring the elements into proper alignment.

3,826,028
INFORMATION STORAGE AND RETRIEVAL SYSTEM AND APPARATUS
Keith E. Shaw, 1206 Skyline, Tyler, Tex. 75701
Filed July 24, 1970, Ser. No. 57,984
Int. Cl. G09f 11/04
U.S. Cl. 40—70 **5 Claims**



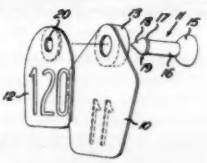
An Information Storage and Retrieval System and Apparatus utilizing two relatively movable members, each carrying a series of indicia alignable in various combinations, one member having an aperture or read-out area formed therein for each of the indicia, each of said apertures having a location different or spaced from all the others; the other member having an information record carrying area for each of the indicia on the two members, each such area having a location different from the locations of the other indicia of such members. The indicia on the two members are moved into registry to dispose the read-out aperture or area of said one member at a particular point with respect to the information record carrying area of the other member, whereby the information record on said other member is visible and readable through said aperture or area, the apertures or areas of said one member are each so disposed that no other can be positioned to read-out the information record contained on the information carrying area of the particular indicia on the record carrying member. The members may be concentric discs which are rotatable relative to one another, or strips which are slidable relative to one another, or a strip with a lateral guide movable transversely relative to the strip for locating the separate information carrying area for each indicia combination of the two members. The size and location of the apertures or read-out areas in the one member relating to each indicia bearing area on said member and the record areas on the other member may be arranged to reduce the size of the members and yet provide large readily readable indicia on the members.

3,826,029
CALENDAR ARRANGEMENT
Jerry Lieberman, 211 W. Olive, Long Beach, N.Y. 11561
Filed Jan. 22, 1973, Ser. No. 325,626
Int. Cl. G09f 1/06
U.S. Cl. 40—107 **1 Claim**



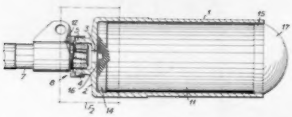
Forming a calendar by a unique manner of cutting and folding a material into a geometric form having adhesive faces and which may be unfolded to show various successive surfaces having dates or advertising material thereon. As the geometric form is unfolded to show a new date that surface formerly showing the date or descriptive material may be adhered to the wall or surface to which the calendar is mounted. On the back surface of each folded dated surface or advertising surface there appears a fragmented portion of an overall pictorial representation so that when the calendar is completely unfolded and the formerly exposed surfaces are adhered to the wall there will be shown a pictorial representation in its completed form, which is comprised of all the back surfaces.

3,826,030
EARTAGS
Arthur Read, Lymm, England, assignor to Universal Tag Company Limited, Aylesbury, Buckinghamshire, England
Filed Apr. 30, 1973, Ser. No. 355,457
Claims priority, application Great Britain, May 8, 1972, 21440/72
Int. Cl. G09f 3/12
U.S. Cl. 40—301 **15 Claims**



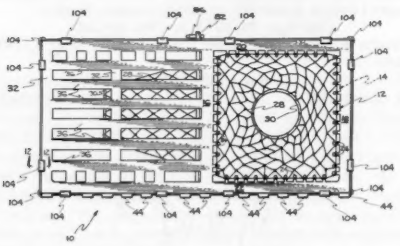
A animal identification eartag comprises a male member having a tab and spike and a female member with an aperture which can be forced over the head of the spike. The male member is formed with the spike joined to the tab by a universal joint formed by a part spherical end on the spike resiliently retained in a socket in the tab, so permitting not only rotation of the tab about the axis of the spike but also limited angular movement about any transverse axis. The socket has an open end so that the jaw of an applicator can bear directly against the part spherical end of the spike so that the spike is held located when applying the tag to an animal.

3,826,031
PROJECTILE LAUNCHERS TO BE MOUNTED ON THE MUZZLE OF A FIRE-ARM
Andre Joseph Christian Gabriels, Reinpadstraat, 3600 Genk, Belgium
Filed Nov. 24, 1972, Ser. No. 309,369
Int. Cl. F41c *27/06*; F42b *11/42*
U.S. Cl. 42—1 F 12 Claims



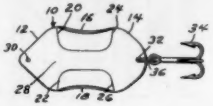
Projectile launchers of the type comprising a projectile encased within a housing having its centrally perforated base prolonged by a tubular socket to be fitted around the muzzle of a fire-arm according to which said socket is provided with a connection piece designed for induced deterioration, said piece being takenaway during the ejection of said projectile thereby facilitating the separation of the launcher from the fire-arm.

3,826,032
APPARATUS FOR TRAPPING CERTAIN CRUSTACEANS AND THE LIKE
Frank Axel Torngren, 47 West St., Attlebore, Mass. 02703
Filed Jan. 31, 1973, Ser. No. 328,316
Int. Cl. A01k *69/08*
U.S. Cl. 43—100 20 Claims



A trap made of plastic wall segments all formed in a single mold is shaped generally as a parallelepiped. An entrance to an antechamber is located in each of two side walls in alignment with each other with netting extending from a side wall opening to a relatively small ring located in the interior to form a generally frustoconical section through which crustaceans of a desired size can crawl into the trap but once in the trap cannot crawl out. A frame separates the antechamber from a parlor section by mounting another generally frustoconical netting allowing ingress but not egress of the crustaceans. The frame also supports the top side of the trap including a door section and provides means for locking the door section. A plurality of foot elements are located in the bottom side to militate against movement of the trap along the ocean floor. Two forms of clip members are shown for fastening adjacent wall segments together.

3,826,033
FISH LURE
Ewell J. Harris, Route No. 3, Box 135A, Adrian, Mich. 49221
Filed Apr. 21, 1972, Ser. No. 264,721
Int. Cl. A01k *85/00*
U.S. Cl. 43—42.5 8 Claims



A fishing lure made of sheet material having a longitudinally extending generally planar center portion with opposite side contoured portions which are beveled to deflect water to the same side of the plane of the center portion and which causes a continually reversing direction of roll about a generally longitudinal axis as the lure is pulled through water.

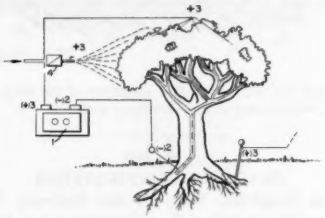
3,826,034
FISHING HOOK ASSEMBLY
Edward W. Herek, 12030 1/2 Magnolia Blvd., Los Angeles, Calif. 91600
Filed July 23, 1973, Ser. No. 381,732
Int. Cl. A01k *91/04*
U.S. Cl. 43—44.83 6 Claims

A fishing hook assembly including a hook having a straight stem or shank having a barb on the curved end thereof and a plurality of barbs carried on the shank which downwardly extend in fixed spaced apart parallel relationship. The assembly further includes an elongated, flexible sleeve having an internal bore for insertably receiving the barbed shank of the hook via an open end of the sleeve. The opposite end of the sleeve incorporates an eye to which the end of the fishing line may be tied. The barbs embed themselves into the wall of the sleeve for retention between the sleeve and the hook.

3,826,035
METHOD OF EXTERMINATING INSECT AND ANIMAL AGRICULTURAL PESTS FROM INFECTED OBJECTS SUCH AS PLANTS
Juan Garcia Paniagua, Alejandria 01609, Colony Residencial Victoria, Guadalajara 5, Jal, Mexico
Filed Sept. 13, 1972, Ser. No. 288,885
Int. Cl. A01m *7/00*, *19/00*
U.S. Cl. 43—98 7 Claims

A novel method of exterminating insect and animal agricultural pests from infected objects such as plants is disclosed. In the preferred inventive embodiment, and as applied to exter-

minating pests from plants such as trees, the root of the tree is electrically grounded by burying a rod or plate of good conductive material adjacent thereto, the rod or plate being coupled to the negative pole of an electric power source. The positive pole is connected to a pipe of good electrically conductive material that is installed in the interior of the outlet of



a hose which is coupled to a pneumatic water pressure system. The continuous flow of water contacts the positive pole and touches the branches, leaves and trunk which have been made previously wet in order to form a good negative circuit, and an electric discharge takes place through the water and surface of the tree to thereby eliminate pests within the tree while not damaging the tree.

3,826,036

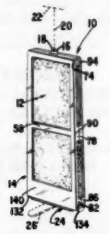
INSECTICIDAL DEVICE

Guenther Neugebauer, Haan, Germany, assignor to American Home Products Corporation, New York, N.Y.

Filed Apr. 17, 1973, Ser. No. 351,898

Int. Cl. A01m *1/20*

U.S. Cl. 43—131 **6 Claims**



An insecticidal device is described which is made up of an insecticidal composition coated on to a substrate which is supported in a cage that may be either suspended or mounted on a horizontal surface. The insecticidal composition is made up of an insect attractant and a non-volatile, contact poison or stomach poison. The one-piece, hinged device has interconnected planar members with large openings, and edge stiffener strips defining side openings. Means are mounted on each stiffener strip to join the interconnected members in abutting relation to support the substrate therebetween.

3,826,037

FLYING TOY AND CATAPULT FOR VERTICAL LAUNCHING THEREOF

Gunter Migowski, Rothschild-Allee 61, Frankfurt am Main, Germany

Filed July 7, 1972, Ser. No. 269,893

Claims priority, application Germany, July 8, 1971, 2134080; July 9, 1971, 2134201

Int. Cl. A63h *27/14*

U.S. Cl. 46—84 **7 Claims**

A catapult and flying body wherein the catapult has a handle and a guide which receives a cooperative slide rail of a flying body. The body has a pair of pivotable fins and a pulling member and means for applying tension to a tensioning member in the guide. The toy also includes resilient means connecting the rail and fins for causing the fins to swing out when the flying body has reached the maximum altitude of its flight path. For catapulting the body to higher altitudes a very large, ground-mounted catapult may be used.

3,826,038

BICYCLE TOY WHICH CAN BE EITHER MANUALLY OPERATED OR REMOTE CONTROLLED BY MEANS OF A WIRE CONTROL OR BY RADIO CONTROL

Augusto Gentilini, Via dei Mille 36, Rome, Italy

Filed Dec. 13, 1972, Ser. No. 314,903

Int. Cl. A63l *23/10*

U.S. Cl. 46—96 **7 Claims**

A model of two wheel vehicle with aligned wheels, the latter being rendered more heavy with respect to the other parts of the vehicle, while maintaining unaltered the shape relationship, provided with means for hauling (or pushing) and for its guide. An articulated puppet can be connected to the pedals and to the handle bar in order to imitate the movements of a cyclist. In case the toy is operated by a motor, the equilibrium changes required for the drive in curve are originated by the displacement of said puppet or other ballast.

3,826,039

FIGURED TOY VEHICLE

Harry Disko, Chicago; Alan A. Hicks, Wilmette, and Howard J. Morrison, Deerfield, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

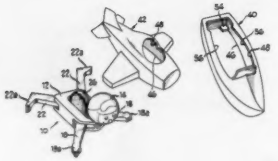
Filed May 23, 1973, Ser. No. 362,884

Int. Cl. A63h *5/00*

U.S. Cl. 46—98 **13 Claims**

A toy wheeled vehicle combination having a chassis defining a human-form body. The body has a human-form head

pivotally attached thereto, pivotal legs with feet portions, and pivoted arms with hand portions. A plurality of shell members defining different vehicle shapes are interchangeably, releasably mountable onto the human-form body through open bottoms in the shell members, with the head member protruding through a top shell opening. The arms and legs are engageable with blocking portions in the shells to releasably

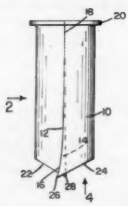


lock the chassis within any one of the shells. The wheeled chassis can be used alone as a roll toy by a child, giving the child amusement and a basis for fantasies involving a motorized human being. The wheel means comprises a solitary flywheel and the feet are weighted to stabilize the vehicle. The chassis normally is used in combination with one of the shells to give the appearance of a human being occupying a vehicle such as an automobile, airplane or boat.

3,826,040
PLANT STEM PROTECTOR

Joseph Normand Roberts, both of 404 Mountain Rd., North Wilbraham, 01067, and Walter Lovell, both of North Wilbraham, Mass.

Filed Oct. 10, 1972, Ser. No. 296,080
Int. Cl. A01g *13/00, 17/12*
U.S. Cl. 47—30 **1 Claim**



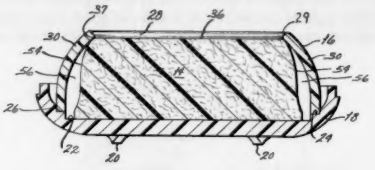
A plant stem protector comprising a one-piece generally tubular member made of self-sustaining but deformable plastic in the general form of a cylinder slit from end to end thereof, said cylinder having open ends with an outstanding flange at one end and at the opposite end it is cut into a concave arcuate conformation providing relatively sharp points adjacent to the slit. These points form entry end edges that overlap each other slightly.

3,826,041
FLORAL ACCESSORY

James M. King, 10515 Tabor St., Los Angeles, Calif. 90034

Continuation of Ser. No. 156,879, June 25, 1971, abandoned.
This application July 20, 1973, Ser. No. 381,216
Int. Cl. A07g *5/00*
U.S. Cl. 47—41.12 **9 Claims**

A floral accessory having a water absorbent filler material disposed in a relatively non-absorbent container. Both the container and filler material are capable of being pierced by the stems of cut flowers. Confronting surface portions of the filler and container are configured to define a collar-like chan-

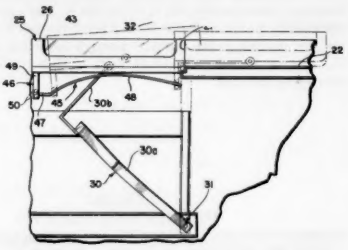


nel around the filler, such that insertion of the stem into the filler is unobstructed by any container material.

3,826,042
OUTSIDE PLUG DOOR SYSTEM

Kristupas Daugirdas, Wilmette, and Redreddy Sukumar Reddy, Chicago, both of Ill., assignors to V.A.C. Industries, Inc.

Filed July 6, 1972, Ser. No. 269,446
Int. Cl. E05d *15/10*
U.S. Cl. 49—213 **20 Claims**

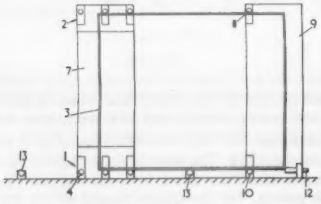


A door system for high-speed rapid transit and railroad passenger car applications including a mechanism for supporting one or more doors and for driving the doors through a compound movement between open and closed positions. The doors, when in open position, are situated outside the vehicle and along one side of the door opening, and during the closing cycle plug into the opening from the outside.

3,826,043
DOOR INSTALLATIONS

Koh Chew Seng, 108 Joo Chiat Ter., Singapore City, Singapore

Filed June 6, 1972, Ser. No. 260,103
Int. Cl. E05f *11/54*
U.S. Cl. 49—360 **3 Claims**



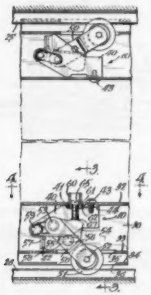
An installation having a slidable door in which there is provided preferably two fixed side elements which are horizon-

tally spaced, with the slidable door being movable between the side elements on rollers which are mounted on said side elements to grip top and bottom portions of the door. Balancing rollers on ground level also support the door.

3,826,044
ROLLER ASSEMBLY

Henry P. Armstrong, Islington, Ontario, Canada, assignor to Truth Incorporated, Owatonna, Minn.

Filed Jan. 26, 1973, Ser. No. 326,969
Int. Cl. A47h *15/00*
U.S. Cl. 49—420 **2 Claims**

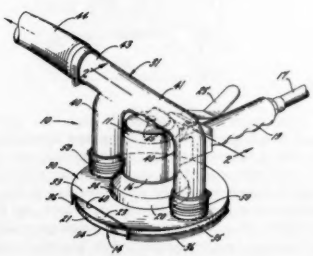


A roller assembly for a sliding closure which is a self-contained unit for simple insertion into the frame of a sliding closure and wherein the roller is carried by a pivotally-mounted arm yieldably urged outwardly through an opening in the frame. The inward limit position of the roller can be adjusted by optionally usable structure which is in plain view for ease of adjustment. The mounting base for the roller assembly is insertable through the frame opening and is held in wedged relation with the interior of the frame by a single fastening member.

3,826,045
ABRADING MACHINE WITH DUST COLLECTING UNIT

Roy J. Champayne, c/o National Detroit, Inc., 2810 Auburn St., Rockford, Ill.

Filed Sept. 14, 1973, Ser. No. 397,260
Int. Cl. B24b *23/00*
U.S. Cl. 51—170 T **6 Claims**

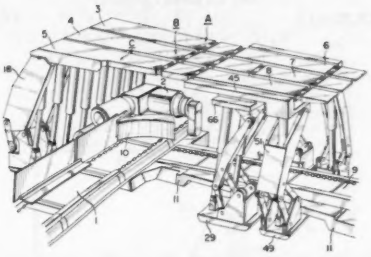


A vacuum unit removes abrading dust through a suction line communicating with a dust confining shroud which overlies and extends around the abrading pad of the machine. The shroud is telescoped rotatably over the motor unit of the machine and is suspended from the suction line which, in turn, is pivotally supported on top of the motor unit and is adapted to be turned relative to the handle of the machine to enable maneuvering of the machine without interference from the suction line.

3,826,046
POWER TOOL ATTACHMENT

Vincent J. Dourian, Algonquin, and William M. Bassett, Highland Park, both of Ill., assignors to New Concepts Co., Inc., Algonquin, Ill.

Filed Dec. 8, 1972, Ser. No. 313,329
Int. Cl. B24b *23/00*
U.S. Cl. 51—170 TL **11 Claims**

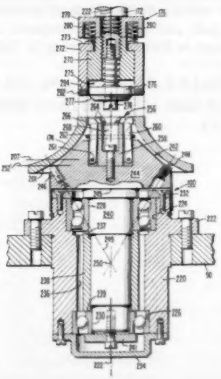


A power tool attachment which is particularly adapted to be mounted on a saber saw to provide a positive reciprocating motion in a direction other than the direction of motion of the saber saw output. The attachment includes a housing which is adapted for releasably mounting on a saber saw. A linkage is mounted in the housing and is adapted for connection to the output of the saber saw. A clutch is drivingly connected to the input linkage. An arm drive is drivingly connected to the clutch to be driven thereby. An output arm is connected to the arm drive to be reciprocated in a direction other than the direction of reciprocation of the saber saw output.

3,826,047
DEVICE FOR MOUNTING AND ORIENTING A WORKPIECE

Wolfgang Max Binder, Indianapolis, Ind., assignor to RCA Corporation, New York, N.Y.

Filed Feb. 28, 1972, Ser. No. 230,009
Int. Cl. B24b *1/00;* **B23b** *25/06;* **B23q** *3/14*
U.S. Cl. 51—277 **35 Claims**



A grinding machine provides for the automatic aligning of the mean axis of an irregular surface of revolution on a work-

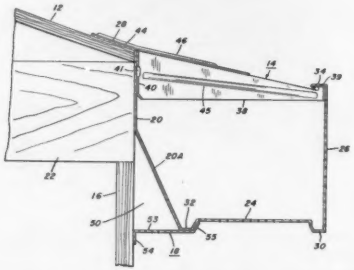
piece to a machine axis and for indexing the aligned workpiece to a plurality of work-stations including first and second indexing tables for grinding planar surfaces and surfaces of revolution on the workpiece with respect to the mean axis.

3,826,048

COMBINED GUTTER, FASCIA, SOFFIT ARRANGEMENT

Bill C. Merkin; Michael J. Tobias, both of Pittsburgh; Richard C. Ray, Lower Burrell, and Robert L. La Barge, Ben Avon, all of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed Aug. 17, 1972, Ser. No. 281,326
Int. Cl. E04d *13/00*
U.S. Cl. 52—11 **1 Claim**



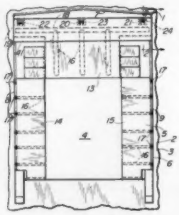
An arrangement and combination in which an elongated unitary gutter, fascia and soffit structure is provided in the form of a structural eave for a building, such as a dwelling house, originally constructed without the customary eave overhang. The unitary gutter, fascia and soffit structure comprises a rear wall having means for attaching the structure to the roof, a horizontal bottom wall forming the soffit, and a front wall forming the fascia, the rear, bottom and fascia walls, in turn, forming the gutter. This eave structure is attached to the roof by unitary, high strength brackets each having a main body portion extending in a vertical plane and traversing the structure, a forward end portion adapted to engage the front fascia wall of the eave, and a roof anchoring portion extending from the rear of the bracket, and integral with the main body portion. Along the front and rear edges of the soffit wall are provided elongated downwardly directed steps.

3,826,049

LOADING DOCK SHELTER WITH INDEPENDENTLY MOVABLE HEAD CURTAIN

Cyril P. Frommelt, and Sylvan J. Frommelt, both of Dubuque, Iowa, assignors to Dubuque Awning & Tent Company, Dubuque, Iowa

Filed Feb. 7, 1973, Ser. No. 330,213
Int. Cl. E06b *1/04*; E04f *10/04*; E04b *1/343*
U.S. Cl. 52—173 **11 Claims**



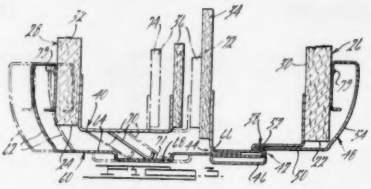
A loading dock shelter embodying a head curtain which is independently, and automatically retractable and extensible.

3,826,050

JAMB CONSTRUCTION

Robert B. Schwartz, Harper Woods; Tara N. Banerjea, Warren, and Donald B. Stinson, Jr., Farmington, all of Mich., assignors to Fruehauf Corporation, Detroit, Mich.

Filed Mar. 14, 1973, Ser. No. 341,142
Int. Cl. E06b *1/20*; E04c *3/40*
U.S. Cl. 52—212 **5 Claims**



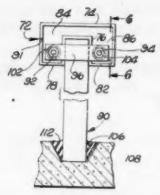
A jamb construction which can be readily installed around approximately aligned openings in adjacent partitions in spite of variations in the orientation of one opening relative to the other opening and which provides an attractive finished appearance when installed.

3,826,051

WALL STRUCTURE

Charles H. Miller, 54-065 Avenida Carranza, La Quinta, Calif. 92253, and Jose A. Mayrl, Centenario 1222 San Pedra Garza, N. Leon, Mexico

Continuation-in-part of Ser. No. 191,276, Oct. 21, 1971. This application June 7, 1972, Ser. No. 260,640
Int. Cl. E04c *3/10, 3/26*
U.S. Cl. 52—227 **1 Claim**



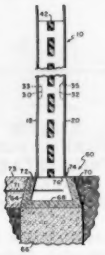
A wall member of generally slab-like configuration is formed of a foamed polymer dispersed throughout a cementitious matrix between a pair of side panels and includes elongate reinforcing members secured under tension and rigid in the depth dimension of the slab. One end of the wall member is positioned in a groove formed in a floor, the floor normally being made of concrete material. Adjacent widths of the wall members may be interconnected in tandem by aligning hollow tubular members in each of the wall members and securing a structural metal rod through the hollow tubular members. Alternatively, a hollow channel member may be positioned on the top ends of the aligned tandem wall members. Structural rods are positioned through openings in the channel member and are used to secure the wall members together. In addition, an environmental seal formed of a gasket-like material may be positioned between abutting ends of the wall members.

3,826,052

COMPOSITE WALL PANEL FOR BUILDING CONSTRUCTION

Carlos A. Tenorio, 3009 Catherine Dr., Fort Michell, Ky. 41017

Filed Oct. 16, 1972, Ser. No. 297,975
Int. Cl. E04c 2/10; E04b 2/42
U.S. Cl. 52—293 13 Claims



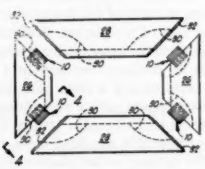
A wall panel comprising an upright core of plastic insulating material with skins overlying opposed faces of the core and extending beyond its top edge to form a continuous upper trough. Sets of generally vertical grooves extend from the continuous upper trough adjacent the skins to the bottom of the core. Additional sets of passages interconnect with the vertical passages to form a network of passages. The passages and open trough are filled with concrete to form a continuous upper beam supported by an integral open web type of construction. Panels may be placed end to end to form perimeter and other walls of a building.

3,826,053

READILY ASSEMBLED JOINT

William R. Cameron, 4424 N.W. 13th St., Oklahoma City, Okla. 73107

Filed Jan. 19, 1972, Ser. No. 218,902
Int. Cl. F16b 7/04
U.S. Cl. 52—309 1 Claim



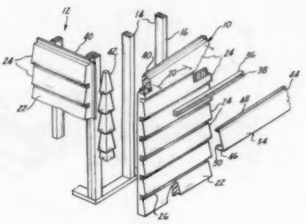
A fastening device for fastening or joining two pieces of relatively rigid material to each other. The fastening device includes a substantially monplanar base plate having projecting from each of the opposite sides thereof, a plurality of vanes arranged in two sets. The sets of vanes are spaced from each other, and individual vanes in each set are spaced from each other by a lesser distance than the spacing of the sets of vanes. Each of the vanes projects from the respective surface of the base plate at an angle of about 15° with respect to a plane extending normal to the base plate. The vanes are made of a deformable, relatively elastic material. The pieces or parts to be joined by the fastening device have slots formed in the facing surfaces at which the joint is to be located, and the fastening device is pressed into the slots by resilient deformation of the vanes of the fastening device.

3,826,054

BUILDING INSULATION AND SHEATHING

Bertram C. Culpepper, Jr., 14508 Susanna, Livonia, Mich. 48154

Filed May 15, 1972, Ser. No. 253,152
Int. Cl. E04c 2/10; E04d 1/20
U.S. Cl. 52—309 6 Claims



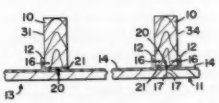
A building sheathing having insulating qualities and adapted to be attached to the outside surfaces of the building studding to form a permanent insulation for the building. In one embodiment, the outer surface of the sheathing is so contoured as to mate with a building exterior wall finish such as an aluminum or vinyl siding; and in addition to providing a snap-on attachment of the siding to the sheathing, support and proper alignment of the exterior wall siding is provided. In a second embodiment, the sheathing has an outer surface contoured to mate with a mounting sheet, fabricated from a suitable material, such as aluminum, having a plurality of horizontally disposed, vertically spaced channels adapted to support a face brick.

3,826,055

SURFACE PANEL AND MOUNTING MEANS THEREFOR

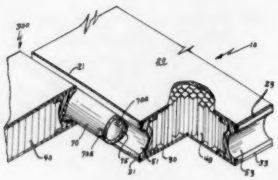
James E. Bobzin, Clearwater, and David P. Kasprzak, Largo, both of Fla., assignors to The Celotex Corporation, Tampa, Fla.

Continuation of Ser. No. 84,044, Oct. 26, 1970, abandoned.
This application Sept. 20, 1972, Ser. No. 290,521
Int. Cl. E04b 2/72
U.S. Cl. 52—483 3 Claims



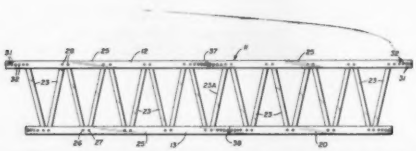
A surface panel is secured to a frame by means of flaps or tabs to form a structural unit without face-exposed fasteners in its field area. If desired surface-exposed fasteners may even be eliminated from the peripheral area of the panel. In a further improved version a complete vapor barrier which also acts as a field securing means is provided.

3,826,056
MODULE CONSTRUCTION SYSTEM
Harold D. Smith, Lincoln, and Richard E. Chambers, Canton, both of Mass., assignors to The Unites States of America as represented by the Secretary of the Air Force, Washington, D.C.
Filed June 7, 1972, Ser. No. 260,567
Int. Cl. E04c 1/10; E04b 2/10
U.S. Cl. 52—584 3 Claims



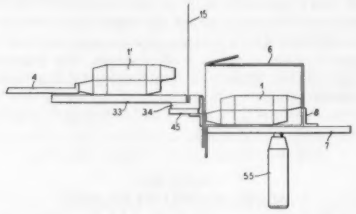
A module construction system which can be used, and can be adapted to be used, to meet varying structural requirements for different construction applications, including use as an aircraft runway and as other surfaces for aircraft, including taxiways and ramps. The system includes: a plurality of identical load bearing structural modules, wherein each identical load bearing structural module is shaped in the form of a rectangular solid, and comprises an aluminum honeycomb core bonded to and between parallel flat skins of epoxy-fiberglass having a polyurethane coating, and molded fiberglass reinforced plastic edges having an outwardly facing semi-cylindrical surface configuration; means for releasably connecting in coplanar relationship, a plurality of the identical adjacent load bearing structural modules side edge-by-side edge and end edge-to-end edge; and means for releasably connecting, in layered relationship a plurality of the identical adjacent load bearing structural modules. Therefore, the system permits the use of a load bearing structural module singly or in an assembly of a plurality of the modules, and either in a single layer or stacked, to form a larger, or thicker, structural unit which is of the desired size, shape, strength, and stiffness.

3,826,057
TRUSS SYSTEM
James W. Franklin, P.O. Box 3646, Albuquerque, N. Mex. 87110
Filed Jan. 3, 1972, Ser. No. 214,699
Int. Cl. E04b 1/32; E04c 3/38
U.S. Cl. 52—641 13 Claims



A composite truss system useful in building applications for form work or permanent installation. Full section chords, struts, couplers, connectors and brace components of tubing are provided in standard sizes for cooperative interconnection and use to provide trusses of various length, height and inclination. Fastener elements may be used at selected positions or openings to provide desired adaptability for various job site requirements. Close interfit and telescoping of elements assures efficient load transfer, assembly and shipment. Job site handling of sectional deck forms is aided through use of a plurality of joined together truss sections mounted on roller or jack units providing height adjustment and form release features.

3,826,058
METHOD AND APPARATUS FOR INTERLEAVING A STRIP OF MATERIAL BETWEEN SUPERPOSED PACKETS
Roland Preisig, Yens, Switzerland, assignor to J. Bobst & Fils S.A.
Filed May 21, 1973, Ser. No. 362,005
Claims priority, application Switzerland, May 24, 1972, 7750/72
Int. Cl. B65b 5/10, 61/20
U.S. Cl. 53—14 11 Claims

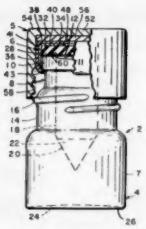


A method and apparatus for inserting packets of articles into a container characterized by positioning a strip of thin material in front of at least one of the packets, gripping a marginal edge of the material so that the insertion of the packet causes bending of the material adjacent the marginal edge and draws the remaining portion of the material into the box to be disposed along the side of the packet. Preferably, the method and apparatus is utilized for interleaving a strip of thin material between a pair of packets disposed in a container. The device utilizes a table having a strip guideway adjacent one edge formed by the gripping device and a tong device which is carried by a moveable stop along the strip guideway. The strip of thin material is preferably provided from a roll and the apparatus includes the cutting device which severs the portion of the strip, which was drawn into the guideway by the tongs, from the remaining portion.

3,826,059
METHOD OF PACKAGING RADIOACTIVE MATERIALS
Howard Novitch, Walnut Creek, Calif., assignor to New England Nuclear Corporation, Boston, Mass.
Division of Ser. No. 190,490, Oct. 19, 1971. This application Oct. 16, 1972, Ser. No. 297,791
Int. Cl. B65b 29/00, 3/04, 53/00
U.S. Cl. 53—27 3 Claims

A dually sealable, non-leaking vial for shipping liquid radioactive materials, particularly sterile radioactive materi-

als, and other sterile liquid materials in which the mouth of the vial, as shipped, is sealed by a needle pierceable septum seal and in which a threaded cap is located and held over the septum seal and mouth with the threads thereby held out of engagement with mating threads on the vial by the septum seal. However, upon removal of the sepum seal after shipment, the threads of the cap mate with the threads of the vial whereby the cap can be removably threaded tightly over the mouth to seal it.



The capped and septum-sealed loaded vial is placed in a heat shrinkable plastic envelope having a bottom end wall and an upstanding cylindrical wall of greater height than the capped, septum-sealed vial and of lesser thickness than the bottom end wall and the envelope is heat shrunk circumferentially, tightly and sealably around the capped septum-sealed vial with the upper part of the envelope being shrunk circumferentially and downwardly tightly over the margin of the upper surface of the cap to securely seal the capped septum-sealed vial.

3,826,060

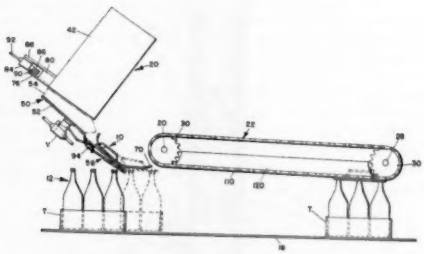
APPARATUS FOR APPLYING CARRYING GRIDS TO BOTTLES

Robert W. Vergobbi, Braintree, Mass., assignor to Pneumatic Scale Corporation, Quincy, Mass.

Filed Nov. 24, 1972, Ser. No. 308,964

Int. Cl. B65b *21/14, 27/04*

U.S. Cl. 53—48 **9 Claims**



Apparatus for applying carrying grids to the tops of groups of bottles, the grids being of the kind having neck encircling elements adapted to be expanded over the caps onto the necks, comprising a conveyor arranged to move groups of bottles of the desired number of bottles along a predetermined path, a hopper supported above the conveyor near one end for supporting a stack of carrying grids for automatically delivering a grid to each successive group of bottles on the conveyor, and pressure-applying means for progressively pushing the grids downwardly over the caps of the bottles onto the necks.

3,826,061

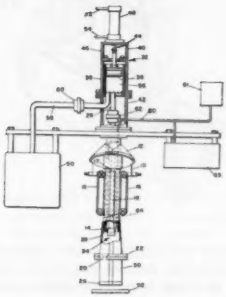
BAG MAKING AND FILLING MACHINE

Donald Arthur Hunter, Mississauga, Ontario, Canada, assignor to Delamere & Williams Company, Limited, Toronto, Canada

Division of Ser. No. 253,128, May 15, 1972, Pat. No. 3,788,245. This application Aug. 27, 1973, Ser. No. 391,648

Int. Cl. B65b *9/12, 39/04*

U.S. Cl. 53—182 **11 Claims**



A bag making and liquid filling machine characterized by a drip-free structure whereby to prevent contamination of the bag making material in an area where a heat seal is to be made.

3,826,062

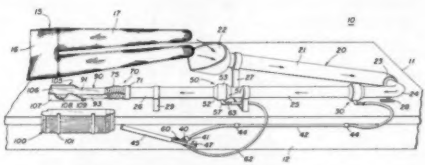
PNEUMATIC PACKAGE LOADER

George E. Lewis; Albert W. Brown, and Harris Dean Osborne, all of Fayetteville, Ark., assignors to Bear Brand Hosiery Co., Chicago, Ill.

Filed May 10, 1973, Ser. No. 359,100

Int. Cl. B65b *1/04, 1/00*

U.S. Cl. 53—255 **15 Claims**



Packaging apparatus for garments such as pantyhose includes a cylindrical conduit having an entry end and an exit end and spaced apart Venturi air chests on the conduit for establishing a stream of air in the conduit to draw the garment into the conduit at the entry end and accelerate the garment through the conduit and eject the garment into a container at the exit end. A nozzle at the exit end of the conduit has a plurality of apertures or orifices extending through the wall to permit air to exit therefrom to allow the garment to be ejected into the container and maintained therein without being discharged therefrom by the stream of air.

3,826,063

ELECTROSTATIC AGGLOMERATION APPARATUS

Theodor Festner, 16 Ridge Rd., Upper Saddle River, N.J. 07458

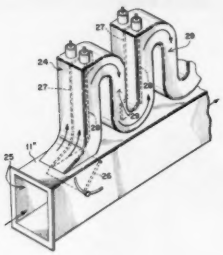
Filed May 21, 1973, Ser. No. 362,141

Int. Cl. B03c *3/00*

U.S. Cl. 55—128 **3 Claims**

An electrostatic agglomeration apparatus for an air filtering and conditioning system, comprising an air duct having a pair

of channels disposed either within the duct or adjacent thereto and opening into the duct at both ends. A plurality of electrically conductive rods are disposed in the channels and are charged electrically positive in one channel and negative in



the other channel so that particulate matter flowing into the channels is ionized by the charges on the electrical rods and agglomerates to form larger particulate masses which are more easily filterable from the air flowing through the system.

3,826,064

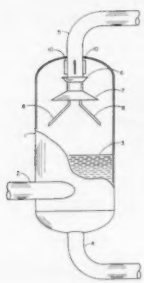
VAPOR-LIQUID SEPARATOR

James O. Nye, Friendswood; Miguel A. Salabarria, Texas City, and David H. Westmoreland, Alvin, all of Tex., assignors to Monsanto Company, St. Louis, Mo.

Filed Apr. 12, 1973, Ser. No. 350,456

Int. Cl. B01d *19/00*

U.S. Cl. 55—204 **9 Claims**



An improved vapor-liquid separator includes a vertically mounted cylindrical vessel having a tangential fluid inlet means such as to produce a vortex or swirling effect of the fluid being introduced into the vessel. A liquid withdrawal conduit is disposed in the lower portion of the vessel to withdraw substantially vapor-free liquid product from the vessel. A vapor withdrawal conduit is disposed in the upper portion of the vessel and extends downwardly into the vessel, along the axis of the vessel, with an upwardly inclined annular catch-pan on the outside of the vapor withdrawal conduit between the upper end of the vessel and the lower open end of the vapor withdrawal conduit. A downwardly inclined annular drip skirt is located below the upwardly inclined catch-pan. Conduits drain the liquid collected in the annular channel formed by the junction of the catch-pan with the outer wall of the vapor withdrawal conduit to a point substantially removed from the open end of the vapor withdrawal conduit.

3,826,065

AIR SEPARATOR FOR TOBACCO FEED SYSTEMS

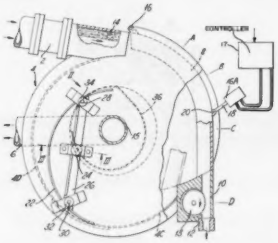
Francis Auguste Maurice Labbe, Neuilly-sur-Seine, France, assignor to Moline Limited, London, England

Filed July 27, 1972, Ser. No. 275,800

Claims priority, application Great Britain, July 28, 1971, 35516/71

Int. Cl. B01d *45/12*

U.S. Cl. 55—309 **13 Claims**



Apparatus for pneumatically feeding tobacco to a cigarette making machine includes an air separator comprising a chamber having an inlet of given cross-sectional area for receiving a flow of tobacco carried by air, a deflector which deflects the tobacco along a curved path towards a tobacco outlet, and an air outlet remote from the deflector, the tobacco outlet having a smaller cross-sectional area than the inlet, and the deflector being so shaped that it progressively reduces the transverse dimensions of the tobacco stream with the aid of centrifugal force to enable the tobacco to pass out through the tobacco outlet.

3,826,066

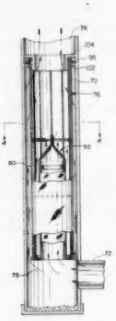
DOUBLE-WALL FILTER BAG CONSTRUCTION

Frank Higgins, Millington, N.J., assignor to Summit Filter Corporation, Summit, N.J.

Continuation-in-part of Ser. No. 178,563, Sept. 8, 1971, abandoned. This application June 15, 1973, Ser. No. 370,515

Int. Cl. B01d *46/02*

U.S. Cl. 55—379 **4 Claims**



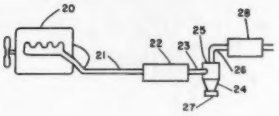
A double-wall dust and the like filter bag including an inner bag surrounded coaxially by an outer bag, the bags consisting of gas permeable and solid retention type of fabric, there being an annular space between the bags, the flow direction of contaminant ladened gases through the filter bag being such that both the interior surface of the inner bag and the exterior surface of the outer bag are exposed to the contaminant ladened gases. Solids are retained by these two surfaces with clean gas flowing into the annular space to exit from an open

top of the construction. In a preferred form a double-wall cartridge consists of a wire cage supporting the inner and outer filter bags and providing the annular space between them. The construction very substantially increases effective filter area for cartridge dimensions and collective capacity; pressure drop across the bag is reduced and the decreased strain improves fabric life and efficiency, and the cartridges are readily adaptable to reverse pulse and reverse air dust collectors.

3,826,067
FILTER

Harry D. Wilder, Midlothian, and Homan B. Kinsley, Jr., Richmond, both of Va., assignors to Ethyl Corporation, Richmond, Va.

Filed Apr. 5, 1972, Ser. No. 241,150
Int. Cl. B01d *27/06*
U.S. Cl. 55—524 **14 Claims**

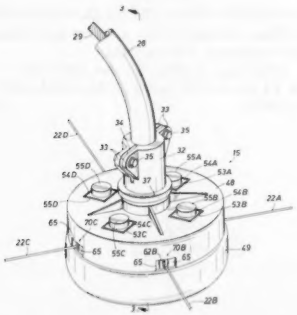


Described herein is a porous filter mat comprising glass fibers and a quaternary ammonium silicate binder. Optionally, the mat contains asbestos or micro-glass fibers which reduce the porosity of the mat to the level required for the particular filtration. Filter elements made from the mat have good structural integrity even at high temperatures. The filter mat is used to remove particulates from the exhaust of an internal combustion engine.

3,826,068
ROTARY CUTTING ASSEMBLY

George C. Ballas, 5146 Richmond Ave., Houston, Tex. 77027, and Thomas N. Geist, Houston, Tex., assignors to said Ballas by said Geist

Continuation-in-part of Ser. No. 207,198, Dec. 13, 1971, Pat. No. 3,708,967. This application Jan. 8, 1973, Ser. No. 321,580
Int. Cl. A01d *55/18*
U.S. Cl. 56—12.7 **11 Claims**

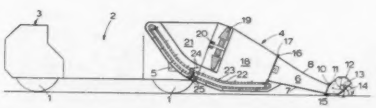


Apparatus is provided with a plurality of flexible non-metallic cutting members for cutting and trimming vegetation, and the like, in a manner to reduce or eliminate the chance of injury or damage to adjacent persons or property. Maximum cutting effectiveness is achieved with a minimum sacrifice of safety by rotating the cutting members at a tip velocity which is a function of the cross sectional diameters.

3,826,069
APPARATUS FOR COLLECTING CROPS

George Robert Tuthill, Wardington House, Wardington, Banbury, Oxfordshire; Julian Harold Vazeille Temperley, and Humphrey Peter Neville Temperley, both of Pass Vale Farm, Burrow Hill, Kingsbury, Martock, Somerset, all of England

Filed June 13, 1972, Ser. No. 262,318
Claims priority, application Great Britain, June 17, 1971, 28557/71
Int. Cl. A01d *51/00*
U.S. Cl. 56—328 R **3 Claims**

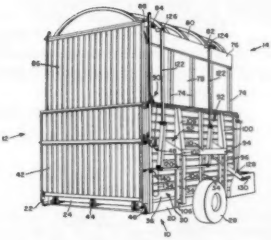


An apparatus is provided for collecting crop elements from the surface of the ground, particularly cider apples and perry pears which are allowed to fall to the ground before collection, and for separating the crop elements from debris. The apparatus includes an elongate duct having an inlet at one end for crop elements and debris. Draught inducing means for example, a fan, are provided to draw the crop element and debris into the duct in a generally horizontal direction. The crop elements are drawn along the duct adjacent the floor thereof, and the debris is drawn through the duct. Means are provided for directing the crop element and debris to separate destinations.

3,826,070
PRESS OPERATING MECHANISM FOR STACK-FORMING MACHINE

William Robert Wood, Ankeny, Iowa, assignor to Deere & Company, Moline, Ill.

Filed June 14, 1973, Ser. No. 370,152
Int. Cl. A01d *89/00*
U.S. Cl. 56—344 **13 Claims**

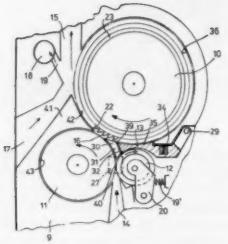


Mechanism for raising and lowering the press or roof on a mobile stack-forming machine, the mechanism including a fore-and-aft pair of cranks mounted on each side of the machine for vertical swinging movement above horizontally coplanar transverse axes, a longitudinally extending horizontal link connecting each pair of cranks, a vertically extending link connecting each crank with the roof, and means for swinging the first crank in each fore-and-aft pair about its transverse axis, the longitudinally extending links serving to simultaneously swing the rear crank in each pair about its axis, and the vertically extending links connecting each of the cranks to the roof serving to raise and lower the roof as the cranks are swung about their axis, the parts being so arranged and constructed that the roof remains level as it is raised and lowered relative to the body of the machine.

3,826,071
APPARATUS FOR OPENING SLIVERS OF TEXTILE FIBERS

Gerhard Grau, Ebersbach, Germany, assignor to Zinser-Textilmaschinen GmbH, Ebersbach, Germany

Filed June 21, 1972, Ser. No. 264,953
Claims priority, application Germany, June 21, 1971, 2130658
Int. Cl. D01h 11/00, 1/12, 13/02
U.S. Cl. 57—56 18 Claims

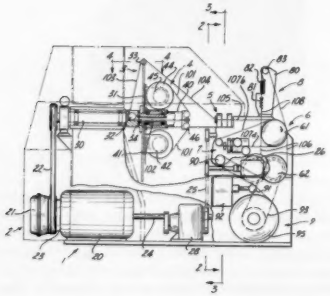


In an open-end spinning device there is provided an opening apparatus for separating slivers into single fibers which are forwarded to a spinning rotor, also forming part of the spinning device. The opening apparatus includes, in a housing, a very rapidly rotating, peripherally toothed opening roll to which the sliver is advanced by an oppositely rotating feed roll spaced at a radial distance of maximum 0.5 mm from the teeth of the opening roll. The working zone of the opening roll is bounded by a peripheral portion of the feed roll.

3,826,072
DOUBLE BEND STRANDED WIRE MAKING MACHINE

Erhart Fischer, 6349 Friedrichstrasse 17, Merkenbach/Dillkreis, Germany

Filed Oct. 10, 1972, Ser. No. 295,910
Int. Cl. D07b 3/02
U.S. Cl. 57—58.57 14 Claims

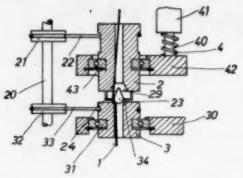


A stranded wire making machine having two twisting stations and constructed so that reversal of the delivery spools is not necessary. The tendency of the preformed stranded wire to untwist is eliminated by an added twisting device which deforms the strands beyond their elastic limit so that a neutral stranded wire is obtained.

3,826,073
ROTATABLE SLIDING-THREAD CLAMP FOR TEXTILE MACHINES

Gerhard Hoeber, Ingolstadt, and Hans Landwehrkamp, Gerolfing, both of Germany, assignors to Schubert & Salzer Maschinenfabrik Aktiengesellschaft, Ingolstadt, Germany

Filed Mar. 20, 1972, Ser. No. 236,304
Claims priority, application Germany, Mar. 30, 1971, 2115225
Int. Cl. D01h 7/92; D02g 1/04; D01h 13/04
U.S. Cl. 57—77.33 7 Claims



Thread or yarn extending through a pair of thread guides is automatically released and subsequently automatically slidably clamped against the mouth of a passage through one of such thread guides, which mouth is adjacent to the other thread guide. The two thread guides are normally urged toward each other by a spring to maintain the clamping element in its thread-clamping position. The spring force may be overcome by positive mechanical, hydraulic, or pneumatic displacing devices to create a pressure differential to override the spring force and effect thread-releasing relative displacement of the thread guides. The clamping element may be fixed to one of the thread guides, or it may be a free ball movable into and out of thread-clamping position by gravitational force, by wedging action of cooperating inclined surfaces, or by an air stream as the thread guides are moved toward and away from each other, respectively. The thread guides are mounted for conjoint rotation to create rotation of the clamped thread and thereby impart twist to the thread.

3,826,074
GLASS FIBER REINFORCED ELASTOMERS

William E. Uffner, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Mar. 1, 1972, Ser. No. 230,724
Int. Cl. B32b 3/18; B29h 17/28; C08d 9/10
U.S. Cl. 57—140 G 23 Claims

This invention is addressed to the treatment of glass fibers for use as reinforcement with elastomeric materials, and particular compositions used in the treatment of glass fibers, wherein the composition contains a resorcinol-aldehyde resin, an incompatible wax and a graft polymer formed of a monomer of vinyl chloride, vinylidene chloride, chloroprene and combinations thereof grafted onto a vinyl pyridine-butadiene-styrene terpolymer backbone.

3,826,075

PROCESS FOR PRODUCING A BULKY YARN

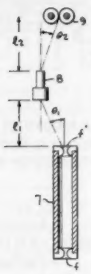
Fumishige Maruyama; Toshiyuki Yasui, and Kaoru Asada, all of Komatsu, Japan, assignors to Teijin Limited, Osaka and Teijin Modern Yarn Co., Ltd., Komatsu-shi, Ishikawa-ken, both of, Japan

Filed Dec. 17, 1971, Ser. No. 209,115

Claims priority, application Japan, Dec. 19, 1970, 45-114882

Int. Cl. D02j 1/20

U.S. Cl. 57—157 TS 20 Claims



A method of producing a bulky yarn having a controlled residual torque, which comprises subjecting a thermoplastic synthetic filament yarn to a series of twisting, heat-setting on a first heater, and untwisting, feeding the yarn into a second heater while rotating it by means of a fluid nozzle and re-heat-setting the yarn in the second heater, the yarn being maintained in a substantially relaxed state during the rotation by the fluid nozzle and the re-heat-setting by the second heater.

3,826,076

ANCHOR ESCAPEMENT FOR TIME-MEASURING INSTRUMENTS

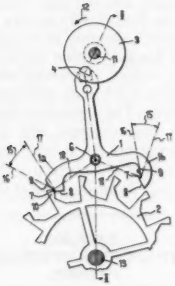
Paul Tuetey, Le Locle, Switzerland, assignor to Les Fabriques d'Assortiments Reunies, Neuchatel, Switzerland

Filed June 19, 1973, Ser. No. 371,412

Claims priority, application Switzerland, July 19, 1972, 10826/72

Int. Cl. G04b 15/00

U.S. Cl. 58—116 R 11 Claims



An anchor escapement without safety pin, anchor horns and banking means on the anchor and without a small roller on the balance, the improvement of the locking faces of the anchor being prolonged by return faces allowing the anchor in the case of knocking and overbanking an additional angular movement to guarantee an unobjectionable working of the escapement even in the case of shocks and knocking.

3,826,077

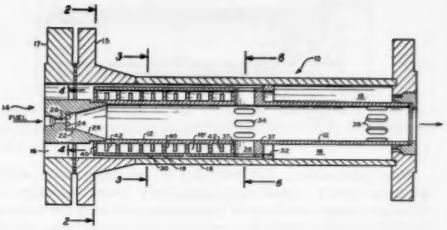
METHOD OF INTRODUCING THREE STREAMS OF AIR INTO A COMBUSTOR WITH SELECTIVE HEATING

Harold T. Quigg, and Robert M. Schirmer, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 208,102, Dec. 15, 1971, abandoned. This application Mar. 27, 1972, Ser. No. 238,317

Int. Cl. F02c 1/00

U.S. Cl. 60—39.02 19 Claims



New combustors, and methods of operating same, which produce lower emissions, particularly lower emissions of nitrogen oxides. Methods and means are provided for supplying separate streams of air to primary and secondary combustion zones of a combustor, for removing heat from said primary combustion zone, and reintroducing said heat into the combustor at a region spaced apart and downstream from said primary and secondary combustion zones.

3,826,078

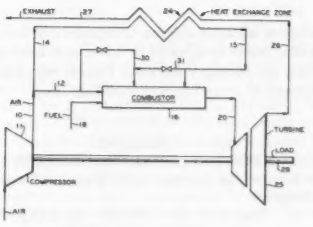
COMBUSTION PROCESS WITH SELECTIVE HEATING OF COMBUSTION AND QUENCH AIR

Harold T. Quigg, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation-in-part of Ser. No. 208,245, Dec. 15, 1971, abandoned. This application Mar. 27, 1972, Ser. No. 238,318

Int. Cl. F02c 1/04

U.S. Cl. 60—39.02 22 Claims

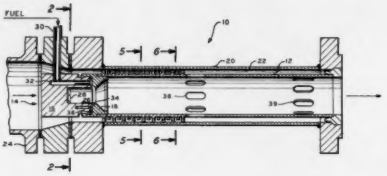


A new combustion process wherein combustion efficiency is retained while reducing inlet air temperature to the combustor so as to obtain reduced nitrogen oxides emissions. A new combustor, and a new combination of combustion apparatus and heat utilization apparatus are also provided.

3,826,079
COMBUSTION METHOD WITH SELECTIVE COOLING AND CONTROLLED FUEL MIXING

Harold T. Quigg, and Robert M. Schirmer, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 15, 1971, Ser. No. 208,247
Int. Cl. F02c 7/26
U.S. Cl. 60—39.06 **6 Claims**

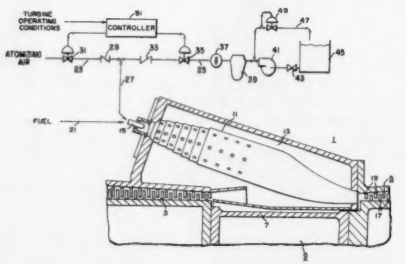


New combustors, and methods of operating same, which produce lower emissions, particularly lower emissions of nitrogen oxides. Method and means are provided for reducing the flame temperature in a primary combustion zone of said combustors.

3,826,080
SYSTEM FOR REDUCING NITROGEN-OXYGEN COMPOUND IN THE EXHAUST OF A GAS TURBINE

Serafino M. De Corso, Media; Charles E. Hussey, Jr., Glenolden, both of Pa., and Michael J. Ambrose, Woodbury, N.J., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 15, 1973, Ser. No. 341,643
Int. Cl. F02c 7/16, 9/14
U.S. Cl. 60—39.55 **8 Claims**



To reduce nitrogen-oxygen compounds in the exhaust of a gas turbine water is supplied to a fuel injection nozzle via the atomizing air passages disposed therein providing a coolant fluid directly to the primary combustion zone.

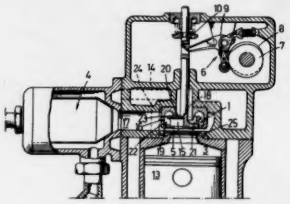
3,826,081
VALVE FOR EXTERNAL COMBUSTION MOTOR

Gilbert Lucien Van Avermaete, 20 Rue de 1 Europe, B-67 Arlon, Belgium

Filed Mar. 28, 1972, Ser. No. 238,769
Int. Cl. F01p 1/08; F02g 3/00
U.S. Cl. 60—39.63 **3 Claims**

The invention relates to an inlet valve of a cylinder wherein expands a pressurized fluid of a piston motor of the kind comprising at least two cylinders inbetween which is provided a combustion chamber at constant pressure wherein the said fluid pressurized in the compressor cylinder is subjected to an increase of pressure.

The seat of the inlet valve is fitted so that the latter shall be opened towards the outside of the cylinder, by means of direct control, without pressure compensation, such valve comprising a cooling device substantially provided by a skirt surrounding the valve over at least part of the periphery thereof. The layout of this valve permits to dispense with a system of pressure compensation and assures an excellent cooling of the valve.



3,826,082
COMBUSTION LINER COOLING SLOT STABILIZING DIMPLE

Robert J. Smuland, Fairfield, and Richard K. Ward, Maineville, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Mar. 30, 1973, Ser. No. 346,595
Int. Cl. F02c 7/18
U.S. Cl. 60—39.65 **9 Claims**

A combustor liner film cooling slot, of the variety including an annular space extending circumferentially of the liner which space is defined between overlapping portions of telescoping liner segments, a cooling fluid plenum substantially circumscribing the liner, means for transferring cooling fluid from the plenum to the space, means for exhausting fluid from the space onto the liner, and an overhanging lip extending substantially axially downstream of the space for facilitating attachment of the fluid to the liner in a protective film barrier, is provided with a plurality of circumferentially spaced stabilizing dimples disposed within the overhanging lip. Each dimple includes a radially depressed portion which has a larger circumferential width at its upstream extremity than its downstream extremity. The depression is disposed toward the associated cooler liner segment and is provided with a geometry which enhances stress relief of the lip as well as cooling fluid attachment as a protective film barrier upon the heated side of the liner downstream from the lip.

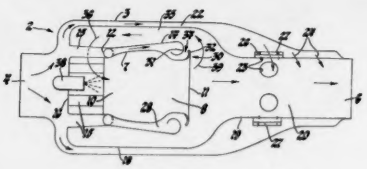
3,826,083
RECIRCULATING COMBUSTION APPARATUS JET PUMP

Harold J. Brandon, St. Louis, Mo., and Wilson C. Spicer, Plainfield, Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed July 16, 1973, Ser. No. 379,448
Int. Cl. F02c 3/00
U.S. Cl. 60—39.65 **1 Claim**

A combustion apparatus for a gas turbine engine includes a Coanda effect jet pump by which air introduced for combustion recirculates combustion products into the combustion

zone of the apparatus. The jet pump is effective to improve the recirculation ratio while maintaining an acceptably low pressure drop in the combustion apparatus. The combustion air flows through the interior of the body of the Coanda nozzle



and over a wall which terminates in a lip converging toward the radial surface of the Coanda nozzle body. A ring of vanes bridges the nozzle and aligns the nozzle walls. The vanes are at an angle to the radial direction to impart swirl to the primary air and improve jet pump performance.

3,826,084

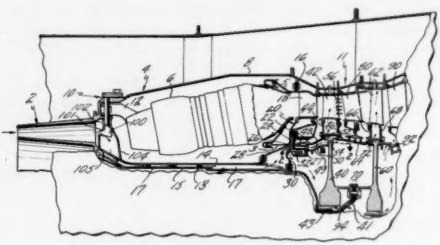
TURBINE COOLANT FLOW SYSTEM

Bruce R. Branstrom, Riviera Beach, and Frank W. Huber, Palm Beach Gardens, both of Fla., assignors to United Aircraft Corporation, East Hartford, Conn.

Continuation of Ser. No. 32,687, April 28, 1970, abandoned. This application Oct. 30, 1973, Ser. No. 411,124

Int. Cl. F02c *7/18*

U.S. Cl. 60—39.66 **4 Claims**



In a turbine engine compressed air is delivered through a diffuser to a burner section and then through a turbine section. A portion of the compressed air from said diffuser is removed by an annular center body manifold and directed by hollow struts inwardly to an annular passageway where the compressed air flow is taken to the forward part of the turbine section. The flow from the annular passageway is then directed into a passageway having directing vanes for imparting a desired velocity and direction to the existing flow so as to be compatible with the rotating turbine disk onto which it flows. This air is then directed to cool blades on that disk and also passed through that disk to be directed to turbine blades on the next disk. The invention herein described was made in the course of or under a contract with the Department of the Air Force.

3,826,085

CYCLONIC TURBINE ENGINES

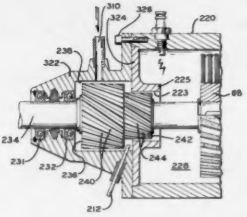
Michael Dworski, 112 Greystone Ln., Rochester, N.Y. 14618

Division of Ser. No. 13,557, Feb. 28, 1970, Pat. No. 3,692,421. This application Aug. 2, 1972, Ser. No. 277,172

Int. Cl. F02c *3/16*

U.S. Cl. 60—39.75 **1 Claim**

A turbine engine having a power rotor with fuel injection and ignition means on one side thereof and a plurality of helical, torque developing slots formed therein. A compressor for supplying compressed air to the combustion chamber is provided and includes a pair of rotors of different diameters having external helical grooves. A disclosed embodiment includes



a two stage compressor with means for adding fuel between the stages and providing an air-fuel mixture to the combustion chamber.

3,826,086

HEAT ENGINE

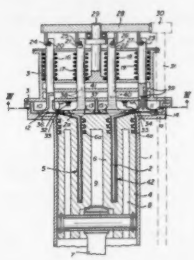
Milorad Milisavljevic, 181 Promenade des Anglais 06-Nice, Nice, France

Filed Sept. 7, 1972, Ser. No. 287,091

Claims priority, application Switzerland, Sept. 8, 1971, 13155/71

Int. Cl. F02g *3/02*

U.S. Cl. 60—39.62 **10 Claims**

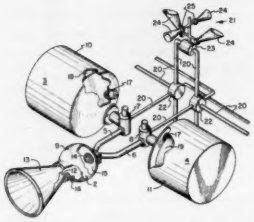


A thermodynamic engine of the external-combustion type, including a motor unit with a driving cylinder and a pair of combustion chambers communicating with that cylinder during alternate downstrokes of its driving piston, further comprises an air compressor having a reciprocating piston synchronised with the driving piston to supply fresh compressed air to the chambers during alternate upstrokes preparatorily to injection of a fresh fuel charge and ignition of the resulting fuel-air mixture in one or the other chamber. After the end of every downstroke, during which the burning mixture from one of the combustion chambers enters the driving cylinder to exert a thrust upon its piston, communication between that chamber and the cylinder is maintained for a fraction of the immediately following upstroke whereby the fresh air now introduced into the chamber by the compressor also enters the driving cylinder to help purge it of combustion residues. The driving and compressor cylinders are coaxially disposed, as are the associated pistons which are concentric portions of a unitary body separated by an annular recess accommodating the inner or driving cylinder; the cylinders terminate in a head provided in a common transverse plane with a set of ports leading to the associated combustion chambers, the ports being controlled by respective valves actuated by a cam carrier which rotates about the cylinder axis.

3,826,087
GAS ROCKET SYSTEM

Allan J. McDonald, Brigham City, Utah, assignor to Thiokol Chemical Corporation, Bristol, Pa.

Filed Nov. 11, 1971, Ser. No. 197,708
Int. Cl. F02k
U.S. Cl. 60—200 2 Claims

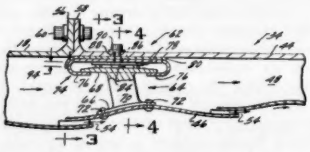


In the invention, a fuel gas generator has an orificed pressure vessel, an igniter, and a solid propellant that produces fuel-rich gas on combustion; an oxidizer gas generator has an orificed pressure vessel, an igniter, and a solid propellant that produces oxidizer-rich gas on combustion; a reaction motor is connected to each gas generator by duct means, with valves in the ducts to meter and proportion the gases as desired into the reaction motor where they are burned for thrust. Gases from the gas generator are relatively cool and can be ducted through conventional valves and other devices to reaction motors for attitude and roll control, as well as for thrust of the vehicle.

3,826,088
GAS TURBINE ENGINE AUGMENTER COOLING LINER STABILIZERS AND SUPPORTS

Dudley O. Nash, Forest Park, and Charles S. Lyons, West Chester, both of Ohio, assignors to General Electric Company, Cincinnati, Ohio

Filed Feb. 1, 1973, Ser. No. 328,769
Int. Cl. F02k 3/10; F16l 21/00
U.S. Cl. 60—261 9 Claims

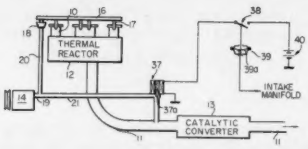


A stabilizing and support system for an augmenter cooling liner of a gas turbine engine is shown to include a plurality of stabilizers circumferentially spaced around, and mounted to, the liner. Each of the stabilizers is captured on its outer end by a stabilizer guide which permits relative thermal expansion to take place between the cooling liner and the exhaust duct to which the liner is mounted. The stabilizer guides are mounted to a positioning band which, in turn, mounts to the inside of the exhaust duct. The positioning band is provided with a gap which permits the band and stabilizer guides to flex to a diameter smaller than the internal diameter of the exhaust duct to permit easy assembly of the liner into the exhaust duct.

3,826,089
AIR-POLLUTION PREVENTIVE ARRANGEMENT

Yasuo Nakajima, Yokosuka; Takeji Oguri, Yokohama, and Hiroshi Kwioda, Tokyo, all of Japan, assignors to Nissan Motor Company, Limited, Kanagawa-ku, Yokohama City, Japan

Filed July 7, 1971, Ser. No. 160,278
Int. Cl. F02b 75/10; F01n 3/14
U.S. Cl. 60—290 5 Claims

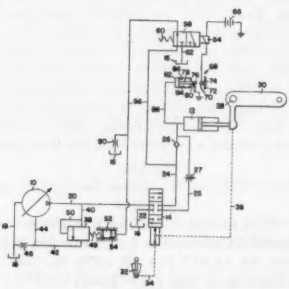


An air-pollution preventive arrangement for use with an internal combustion engine for motor vehicles, adapted to reduce the concentrations of noxious compounds such as unburned hydrocarbons and carbon-monoxides contained in the engine exhaust gases. The arrangement comprises a thermal reactor for primarily re-combusting the exhaust gases and a catalytic converter for secondarily recombusting the exhaust gases passed from the thermal reactor so as to oxidize the residual unburned compounds. An air injection unit supplies additional air which is admixed, in a limited proportion, to the exhaust gases entering the thermal reactor to aid in the primary re-combustion of the exhaust gases therein. The noxious unconsumed hydrocarbons and carbon-monoxides are thus converted into innocuous compounds at efficiencies which are far higher than those attained where the thermal reactor or the catalytic converter is employed independently. Such additional air may also be admixed to the exhaust gases entering the catalytic converter which is located downstream of the thermal reactor, whereby the re-combustion efficiencies of the reactor and converter are maintained athigh levels throughout varying driving conditions of the motor vehicle. The arrangement may also comprise a second catalytic converter which is adapted to reduce nitrogen oxides in the exhaust gases.

3,826,090
VARIABLE PRESSURE HYDRAULIC SYSTEM

James Melvin Bahl, Waterloo, Iowa, assignor to Deere & Company, Moline, Ill.

Filed July 25, 1973, Ser. No. 382,516
Int. Cl. F16h 39/46
U.S. Cl. 60—445 12 Claims



A variable pressure hydraulic system in which a motor is operated by a variable displacement pump whose displace-

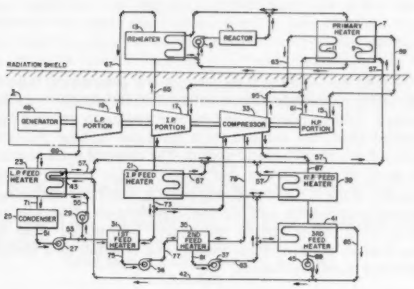
ment is regulated by a control valve which is sensitive to the pressure at the hydraulic motor to maintain the pump outlet pressure higher than the motor pressure. A normally open solenoid-controlled valve is movable upon actuation of the solenoid to a closed position in which it blocks communication between the control valve and the hydraulic motor. The electrical circuit for the solenoid valve includes a pressure sensitive switch responsive to the fluid pressure at the hydraulic motor so that when the fluid pressure at the hydraulic motor reaches a predetermined value, the solenoid is activated to close the solenoid-controlled valve and block communication between the control valve and the hydraulic motor. In this manner, the maximum pressure of the system is limited.

3,826,091

PROCESS FOR CONVERTING HEAT PRODUCED BY A NUCLEAR REACTOR TO ELECTRICAL ENERGY

William F. Stahl, Media, Pa., assignor to Westinghouse Electric Corporation, Philadelphia, Pa.

Filed May 24, 1971, Ser. No. 146,239
Int. Cl. F01k *25/00*
U.S. Cl. 60—644 **6 Claims**



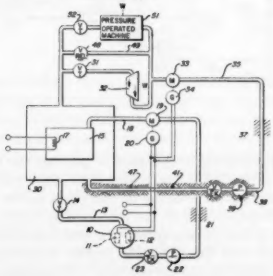
A thermodynamic process for converting heat produced by a nuclear reactor to electrical energy utilizing a liquid metal as a primary fluid and sulfur dioxide as a secondary fluid. The sulfur dioxide is expanded in a turbo-generator set, condensed and recycled through a closed secondary fluid loop.

3,826,092

CLOSED CYCLE ENERGY CONVERSION SYSTEM

Thomas L. Cosby, 10713 S. Michigan Ave., Chicago, Ill. 60643

Filed Sept. 18, 1972, Ser. No. 289,953
Int. Cl. F01k *25/00*
U.S. Cl. 60—643 **16 Claims**



A system for utilizing heat energy to perform work has closed cycle fuel and power subsystems.

In the fuel subsystem water is disassociated by electrolysis in a generator chamber. The hydrogen and oxygen are burned in a combustion chamber, evaporating a working fluid in an evaporator chamber of the power subsystem. The temperature of the combustion chamber is such that water is discharged as steam under pressure and operates an air motor to drive a generator. The steam is then condensed and pumped back to the fuel generating chamber.

In the power subsystem the evaporated working fluid drives a turbine to perform work. The discharge from the turbine operates a low pressure motor to drive a second generator. The working fluid is cooled in a heat exchanger to the liquefaction temperature, liquefied by a compressor and returned to the evaporator.

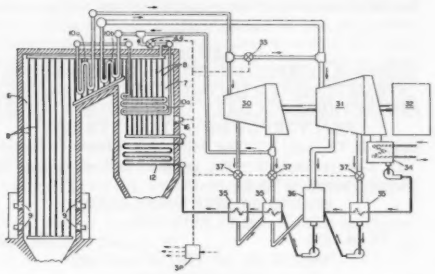
Both generators supply electrical energy to the fuel generator and additional electrical energy is supplied as needed from an outside source.

3,826,093

REHEAT VAPOR GENERATOR

Emmanuel Stephen Miliaras, 12 Mount Pleasant St., Winchester, Mass. 01890

Filed Apr. 10, 1973, Ser. No. 349,790
Int. Cl. F01d *13/02*; **F01k** *21/00*
U.S. Cl. 60—665 **5 Claims**



This invention relates to a method for increasing the superheated output flow of a reheat type vapor generator by apportioning additional saturated vapor flow between the superheater and resuper-heater and sizing each accordingly rather than sizing each for the total increase in saturated vapor flow. Such vapor generators can be utilized for example in reheat type steam generators supplying turbines of high, intermediate and low pressure sections for the purpose of meeting short duration electrical demand.

3,826,094

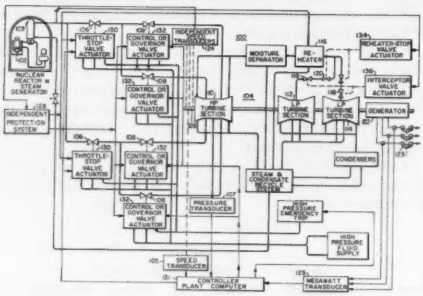
SYSTEM AND METHOD FOR OPERATING A STEAM TURBINE WITH INDEPENDENT OVERSPEED PROTECTION ESPECIALLY ADAPTED FOR A NUCLEAR REACTOR POWERED STEAM TURBINE

Joseph D. Conrad, Jr., Glen Mills; Wilmer C. Gangloff, Jr., Murrysville, and Michael C. Luongo, Brookhaven, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 14, 1971, Ser. No. 189,226
Int. Cl. F01k *7/16*
U.S. Cl. 60—686 **27 Claims**

In a steam turbine an overspeed protection system and method is provided which operates completely independently of the conventional steam valve controller or governor. Existing hydraulically actuated valves such as stop valves, governor valves, interceptor valves, etc., are deactivated by draining hydraulic control fluid from the aforementioned through the action of specially provided dump valves. A pair of dump valves is provided for each of the steam flow valves.

Three turbine speed sensing transducers operating independently provide signals which are translated through three corresponding check circuits into related overspeed check



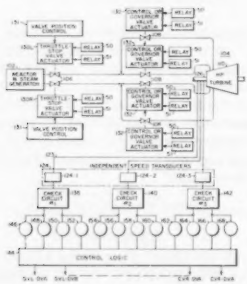
signals. The three resulting check signals relating to overspeed are translated through majority switching logic into two dump valve trip signals. Each set of such trip signals operates one of the pair of dump valves on each steam control valve.

3,826,095

GENERAL SYSTEM AND METHOD FOR OPERATING A STEAM TURBINE WITH INDEPENDENT OVERSPEED PROTECTION ESPECIALLY ADAPTED FOR A NUCLEAR REACTOR POWERED STEAM TURBINE

Joseph D. Conrad, Jr., Glen Mills, and Wilmer C. Gangloff, Jr., Murrysville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Oct. 14, 1971, Ser. No. 189,320
Int. Cl. F01k *7/16*
U.S. Cl. 60—686 **20 Claims**



In a steam turbine an overspeed protection system and method is provided which operates completely independently of the conventional steam valve controller or governor. Existing hydraulically actuated valves such as stop valves, governor valves, interceptor valves, etc., are deactivated by draining hydraulic control fluid from the aforementioned through the action of specially provided dump valves. A pair of dump valves is provided for each of the steam flow valves.

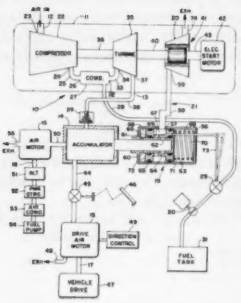
Three turbine speed sensing transducers operating independently provide signals which are translated through three corresponding check circuits into related overspeed check signals. The three resulting check signals relating to overspeed are translated through majority switching logic into two dump valve trip signals. Each set of such trip signals operates one of the pair of dump valves on each steam control valve.

3,826,096

FLUID POWER DRIVE SYSTEM

Louis C. Hrusch, 13461 Green Dr., Chesterland, Ohio 44026

Filed Sept. 12, 1972, Ser. No. 288,404
Int. Cl. F01b *21/00*
U.S. Cl. 60—709 **11 Claims**



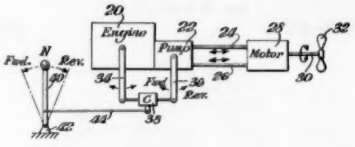
A fluid power drive system supplying pressurized fluid for operating pneumatic motors or other fluid responsive devices using a fluid compressor and turbine engine to develop pressurized fluid, the exhaust fluid from the turbine providing power for such pneumatic motors. The external work required to drive the compressor and turbine engine may be supplemented using a regenerative feedback apparatus including a second compressor and turbine combination of an idle turbine, each being driven by excess pressurized fluid not required by the pneumatic motors and released by a variable pressure relief mechanism.

3,826,097

VARIABLE SPEED HYDROSTATIC DRIVE

John W. Tone, 2601 Foulk, Wilmington, Del. 19810

Filed Nov. 21, 1972, Ser. No. 308,567
Int. Cl. B62d *11/02*
U.S. Cl. 60—719 **7 Claims**



A hydrostatic drive is operated to provide the required demand horsepower of a particular load and speed condition while maximizing the loading of the input prime mover. The prime mover speed control and the variable displacement control lever of a hydrostatic pump are interconnected by a sliding cam such that the available power output of the prime mover is coupled to the driven load with sufficient power at the minimum prime mover speed where this power is developed. This extends the useful life and reduces the fuel consumption of the prime mover. The overall efficiency of the drive system is improved.

3,826,098

METHOD AND MEANS FOR REDUCING WAVE PRESSURES ON UNDERSEA CONSTRUCTIONS

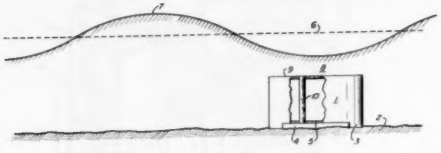
Jan Larsen, Marknadsvagen 61, Taby, Sweden

Filed Sept. 25, 1972, Ser. No. 291,817

Claims priority, application Sweden, Oct. 12, 1971, 12921/71

Int. Cl. E02d 29/00

U.S. Cl. 61—46 8 Claims



A method and device for reducing lifting forces, on an undersea construction, resting on the bottom of the sea. Such lifting forces are caused by passing wave troughs which create more significant low pressures on the upper side of the construction than those low pressures at the bottom of the sea. The invention effects a pressure equalization between said two low pressure areas. Such a pressure equalization an be achieved by placing the area below the bottom of the construction in open communication with the area above the construction.

3,826,099

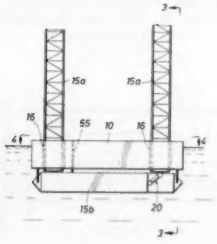
SELF-ELEVATING OFFSHORE PLATFORM WITH FOLDING LEGS

Peter M. Lovie, Houston, Tex., assignor to Engineering Technology Analysts, Inc., Houston, Tex.

Filed Sept. 25, 1972, Ser. No. 291,780

Int. Cl. E02b 17/00

U.S. Cl. 61—46.5 17 Claims



An offshore drilling unit of the self elevating platform type having a floating hull and plurality of legs movable from a raised position, in which the legs are supported by the floating hull, to a lowered position engaging the floor of a body of water, in which the hull is supported on the legs. The legs are of articulated construction permitting a first portion of each leg, when in the raised position, to swing from longitudinal alignment with a second portion of the leg to horizontal alignment underneath the hull for carriage during water travel. Ballast means including tanks in the first portion of leg may be provided for moving the first leg portion between the longitudinally aligned position and the horizontal position underneath the hull. The first portion of the leg may be attached to the second portion by a pivot arrangement and disengageable fastening assembly.

3,826,100

METHOD AND APPARATUS FOR CONTROLLING FREEZING APPARATUS

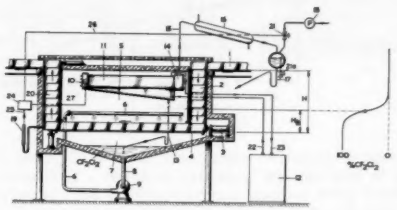
Laszlo Vahl, Charlotte de Bourbonstraat 22, Delft, Netherlands

Filed May 19, 1972, Ser. No. 255,071

Claims priority, application Netherlands, May 21, 1971, 7106997

Int. Cl. F25d 13/06

U.S. Cl. 62—63 12 Claims



Method and apparatus for optimum recovery of an evaporating coolant in a direct contact type of freezing apparatus, such method including measuring the differential pressure in the supply or discharge duct to or from the freezing chamber and the pressure of the air in the space in which the apparatus is located resulting from the diffusion of coolant and air within the apparatus and using the pressure difference to control the discharge of air from the apparatus.

3,826,101

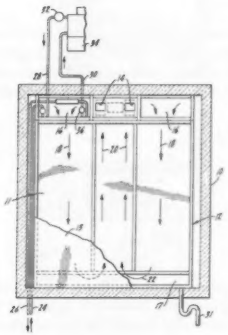
PLATE DEFROSTING SYSTEM UTILIZING DEFROSTING LIQUID FROM A VEHICLE ENGINE

Harry C. Fischer, Royal Oak, Md., assignor to Dale Refrigerating Company, Chicago, Ill.

Filed June 26, 1973, Ser. No. 373,667

Int. Cl. F25d 21/12

U.S. Cl. 62—82 12 Claims

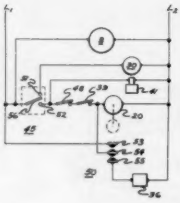


A vehicle refrigeration system uses an eutectic holdover refrigeration plate unit containing plates with internal defrosting coil. The defrosting coils are supplied with coolant from the vehicle engine system, at the desire of the operator, with the supply of engine coolant being terminated automatically at a predetermined temperature.

3,826,102
REFRIGERATOR INCLUDING AUTOMATIC ICE MAKER AND WATER RESERVOIR

Julius B. Horvay, and Frank A. Schumacher, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed June 21, 1973, Ser. No. 372,185
Int. Cl. F25c 1/04
U.S. Cl. 62—137 2 Claims

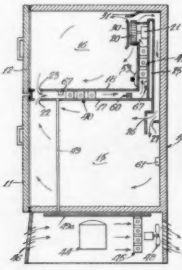


A refrigerator particularly adapted for the manufacture and storage of ice pieces comprising a below-freezing compartment containing an automatic ice maker and an above-freezing compartment containing a water reservoir. The ice maker control circuitry for controlling the operation of the ice maker through an ice discharging and water fill cycle includes a switch means associated with the reservoir for interrupting the ice maker operation when the water level is low but assuring operation of the ice maker through the water fill step.

3,826,103
APPLIANCE DEFROSTING SYSTEM AND SWITCH MEANS

Philip D. Grover, 3507 Glenwood Ave., Two Rivers, Wis. 54241

Filed Aug. 7, 1972, Ser. No. 278,524
Int. Cl. F25d 21/02
U.S. Cl. 62—140 9 Claims

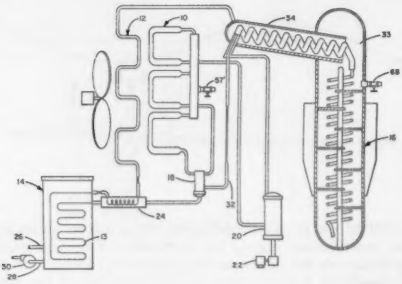


A defrosting system for an appliance having circulating airflow over cooling coils and means for supplying coolant to the coils, selectively operable means for defrosting the appliance including switch means responsive to a reduction of airflow within the appliance because of frost buildup on the cooling coils to initiate the defrost cycle, and additional switch means responsive to the temperature within the appliance to discontinue the defrosting operation and place the appliance back in condition for normal operation. Switch means are provided for use in the circuit which are uniquely responsive to airflow and which have other structural features uniquely adapting them to their application in a defrosting system.

3,826,104
APPARATUS FOR CHARGING ABSORPTION REFRIGERATION SYSTEMS

Jimmy W. Lamb, and Richard A. English, both of Indianapolis, Ind., assignors to Carrier Corporation, Syracuse, N.Y.

Filed June 30, 1972, Ser. No. 267,744
Int. Cl. F25b 45/00
U.S. Cl. 62—149 6 Claims

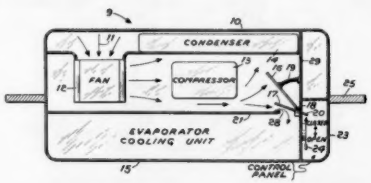


An apparatus for automatically adding and removing solution from an ammonia-water absorption refrigeration system to provide a proper charge in the machine which is especially adapted for use under field service conditions. The apparatus includes a solution tank and control means connected to the system for alternately withdrawing excess solution from the analyzer and adding refrigerant vapor at the evaporator or for withdrawing refrigerant vapor from the analyzer and adding solution at the evaporator while the refrigeration system is in operation, to automatically achieve an accurate solution charge in the machine.

3,826,105
VENTILATION DAMPER FOR AIR CONDITIONING APPARATUS

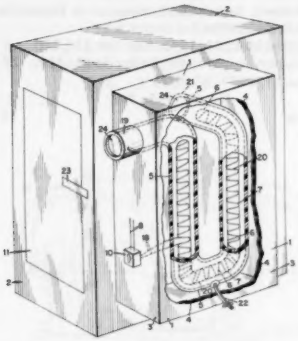
Kenneth E. Marsteller, Willow Grove, Pa., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.

Filed Apr. 19, 1973, Ser. No. 352,754
Int. Cl. F25d 23/12
U.S. Cl. 62—262 11 Claims



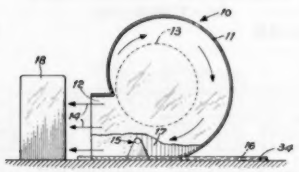
A ventilation damper for a unitary air conditioner wherein a partition separates the area to be cooled from ambient. An interconnecting aperture in the partition permits outside air to be conveyed into the area to be cooled. A damper mechanism or door normally closing the aperture opens in operative response to a flow of external air produced by a fan or blower. The air flow may be provided by the same fan or blower which is used to conduct ambient air over the external condenser of the air conditioning unit. Thus there is provided a ventilation damper which automatically permits the entry of outside air into the area when the air conditioner is operating and automatically prevents the entry of outside air when it is inoperative.

3,826,106
REFRIGERATION APPARATUS AND PROCESS
Edward J. O'Hanlon, and Lewis F. Lavery, both of c/o Robert Kemp, Box 96, Lansingburgh, N.Y. 12182
Filed Dec. 14, 1972, Ser. No. 315,158
Int. Cl. F25d *21/06*
U.S. Cl. 62—275 4 Claims



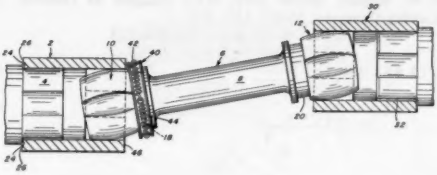
Means and methods of equalizing atmospheric pressures inside and outside a refrigerating chamber, collecting atmospheric moisture outside of and away from refrigerating units, elongating time periods between defrostings, thus increasing overall efficiency and economy of cold production.

3,826,107
CONDENSATE ENTRAINMENT DEVICE
Kenneth E. Marsteller, Willow Grove, Pa., assignor to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed Apr. 19, 1973, Ser. No. 352,759
Int. Cl. F25b *47/00*
U.S. Cl. 62—279 14 Claims



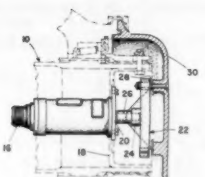
Apparatus for effecting a transfer of heat wherein a sump collects water condensed on a cooling coil or heat exchanger. A fan or blower member produces a flow of outside air in a substantially uni-directional manner passing over and through a second heat exchanger to enhance the transmission of heat energy to the ambient environment. A water feed device is disposed in the air flow and configured so as to provide a relatively low pressure in a region of the air flow communicating through the device with the water collected in the sump. An air diversion member is used to conduct a portion of the air flow into the water communicating with the low pressure region. This results in percolation of the air through the water and its ultimate ejectment into the air flow through said water feed device. Passage of the air through the water entrains droplets thus producing a discharge of the condensate water into the air flow.

3,826,108
ROLLING MILL DRIVE CONSTRUCTION
John H. Bradel, Jr., Markman Park Rd., R.D. No. 1, Baden, Pa. 15005, and Lew Watkins, R.D. No. 2, Dundee, Ohio 44624
Filed Aug. 3, 1973, Ser. No. 385,446
Int. Cl. F16d *3/18*
U.S. Cl. 64—9 R 17 Claims



A rolling mill drive construction including a tubular coupling box, a roll neck extending into one end of the coupling box and a spindle having a head extending into the coupling box from the other end. The spindle has an annular outwardly open groove disposed exteriorly of the coupling box and adjacent thereto. A circumferentially continuous retaining member is secured within the spindle groove for resisting movement of the coupling box along the spindle therebeyond. The spindle annular groove preferably has a diameter not less than the base diameter of the spindle. The retaining member may be a retaining ring having first and second ring elements pivotally secured to each other and a fastener element securing the retaining ring against relative separating rotation of the two elements. A second coupling box may be disposed in spaced relationship with the first coupling box and a second spindle head and pinion may be received within with a similar groove and retaining member securing the second box in place. The spindle heads have outwardly convex lateral portions in contact with the coupling box interior to permit efficient operation when the two coupling boxes are not axially aligned, thereby placing the spindle longitudinal axis in angular disposition with respect thereto. The radial outwardly disposed portions of the retaining member are preferably substantially continuous to provide uniform restraint against undesired coupling box movement during rotation of the spindle in such angular position.

3,826,109
CAM POSITIONED DRIVE CONNECTOR FOR ROTOR
Basil M. Madigan, Wadsworth, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed July 25, 1972, Ser. No. 274,854
Int. Cl. F16d *3/14*
U.S. Cl. 64—27 R 7 Claims



The invention provides an improved drive connector particularly adapted for a wheel speed transducer which is automatically cam positioned, and which eliminates the problem

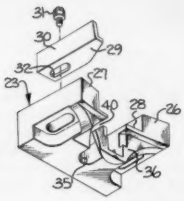
of binding and misalignment of the driven shaft or rotor. Further, the system is less expensive than the former bellows type approach, as well as being better at eliminating bearing loads.

3,826,110

YARN FEEDING AND CONTROL MEANS FOR CIRCULAR KNITTING MACHINE

Otis W. Holder, Mount Airy, N.C., assignor to Oakdale Knitting Company, Mount Airy, N.C.

Filed Apr. 3, 1972, Ser. No. 240,523
Int. Cl. D04b *9/12, 9/18, 15/58*
U.S. Cl. 66—9 R **3 Claims**



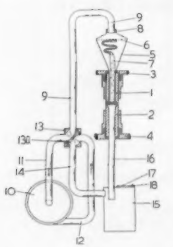
The plating position of plural yarns is accurately controlled during the knitting of both plain fabric and rib fabric in the formation of socks on a circular knitting machine of the type including both dial and cylinder needles. The yarn feeding and control means includes a special "drop" throat plate and a special yarn feed finger adapted to feed terry loop forming yarn at an upper throat level and elastic and inelastic body yarns at the same level in a lower throat in the throat plate. Radial separation of the elastic and inelastic body yarns is achieved by means of a yarn passage slot extending from the upper throat level to one side of the lower throat. This position of the body yarns is maintained as these yarns are fed to the needles to provide accurate plating of the yarns in the fabric.

3,826,111

CIRCULAR KNITTING MACHINE SUCTION TAKEUP

Roland Peberdy, Leicestershire, England, assignor to The Bentley Engineering Company Limited, Leicester, England

Filed Mar. 8, 1971, Ser. No. 121,649
Claims priority, application Great Britain, Mar. 11, 1970, 11566/70
Int. Cl. D04b *15/92, 9/10*
U.S. Cl. 66—14 **8 Claims**



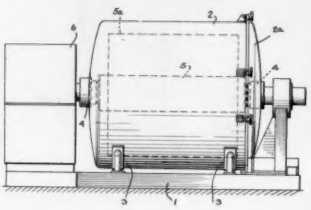
A method and means for producing tubular knitted fabric, as for stockings, socks or pantie hose, on a rotary cylinder circular knitting machine in which the fabric on being knitted is withdrawn upwardly from the knitting level into a receiving unit which rotates with the cylinder and on completion is withdrawn downwardly through the cylinder by reverse air flow into a lower receptacle which is stationary. A switching valve operated from the machine control means is used to switch air suction from a suction generator to the receiving unit and the lower receptacle as and when required.

3,826,112

APPARATUS FOR TREATMENT OF YARNS AND WEB-LIKE MATERIAL

Uwe Sick, Wattwil, Switzerland, assignor to Heberlein & Co. AG, Wattwil, Switzerland

Filed Mar. 21, 1972, Ser. No. 236,720
Claims priority, application Switzerland, Mar. 25, 1971, 4399/71; June 17, 1971, 8849/71
Int. Cl. B05c *8/02*
U.S. Cl. 68—8 **11 Claims**



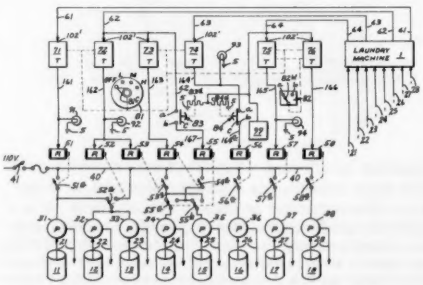
A machine for full width treatment of textile material wound onto a perforated beam wherein a chamber is mounted on a frame with supports extending into the chamber for receiving the beam from a transport device, the beam being supported at both ends during rotation for treatment, one support holding the beam during transfer from the transfer device.

3,826,113

ADDITIVE CONTROL AND INJECTION SYSTEM USEFUL IN LAUNDRY MACHINE OPERATIONS

Stan L. C. Boraas, and Marcus I. Nystuen, both of St. Paul, Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.

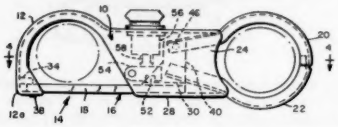
Filed May 7, 1973, Ser. No. 358,098
Int. Cl. D06f *33/02*
U.S. Cl. 68—12 R **5 Claims**



A system for selectively adding a plurality of liquid chemicals to a laundry machine in response to triggering signals from the machine is disclosed. Pumps are provided for pumping chemicals from their shipping drums through conduit means to the washing machine. Control means are associated with this system allowing the operator to remotely vary the chemical mix pumped to the washer by making control switch

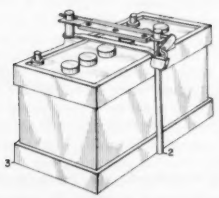
selections. The selections correspond to the soil levels of the laundry load, the presence of greasy soils, the need for bleach and the presence of permanent press fabrics. This injection process is controlled by a plurality of sequentially activated electrical timers that energize relays to in turn energize the pumps in selected groups. Means are provided for limited remote monitoring of the function of the system.

3,826,114
LOCKING DEVICE
Galo P. Emerson, 71 Marlborough St., Boston, Mass. 02116
Filed Dec. 1, 1972, Ser. No. 311,256
Int. Cl. E05b *73/00*
U.S. Cl. 70—14 **11 Claims**



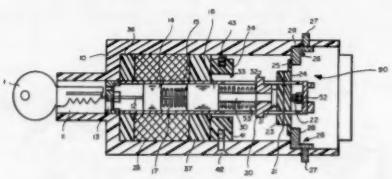
A locking device comprising a stock provided at one end with a fixed hook having an open side, a bolt slidingly mounted on the stock for movement across the open side of the hook and a pair of jaws mounted on the bolt which are separable when the bolt is withdrawn from the open side of the hook and are movable into engagement by movement of the bolt to a position across the open side of the hook, in which position the ends of the jaws connected to the bolt are concealed within the stock, and a lock for holding the bolt in this latter position.

3,826,115
BATTERY LOCKING DEVICE
B. T. Davis, 1029 Elm St., Waco, Tex. 76704
Filed Sept. 12, 1972, Ser. No. 276,849
Int. Cl. E05b *73/00;* **H01m** *1/04*
U.S. Cl. 70—258 **2 Claims**



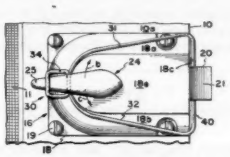
The battery locking device, which I term Battery Watchman, is a device consisting of several pieces of metal that is designed and constructed in such a manner as to provide a method of conveniently and economically locking a motor vehicle battery in place. The Battery Watchman consists of a pair of holddown slides which are to be fitted into a retaining slide in such a fashion as to allow the holddown slides to be fitted over holddown bolts, which are a part of the standard equipment of an automobile, and to be secured by a pair of holddown nuts which are screwed onto the holddown bolts. Each holddown nut contains an opening thru which an adjustment rod is placed in such a manner as to provide for the securing of the battery.

3,826,116
IGNITION STARTER LOCK KEY REMOVAL SYSTEM
Dominic Messera, and Louis Messera, both of 28 Spring St., Oyster Bay, N.Y. 11771
Filed May 3, 1973, Ser. No. 356,787
Int. Cl. E05b *17/00*
U.S. Cl. 70—388 **8 Claims**



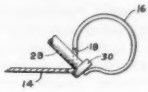
A key-actuated lock has a core member connected to the barrel, and a push rod and a plunger inside the core member. When a key is inserted in the lock, the push rod and plunger are pushed back into the core, with the push rod closing buzzer contacts. Further rotation of the key disconnects the buzzer and starts the ignition. When the key is returned to neutral the plunger is energized to eject the key.

3,826,117
DOOR SECURING APPARATUS
Charles R. Racobs, 644 S. Park St., Saginaw, Mich. 48607
Filed Dec. 1, 1972, Ser. No. 311,279
Int. Cl. E05b *13/08*
U.S. Cl. 70—416 **6 Claims**



The combination of a door lock, including a door locking bolt and a bolt operating handle swingable to turn the bolt between locking and unlocking positions, and apparatus coupled to the handle to prevent unauthorized turning of the handle.

3,826,118
KEY CONTAINER ASSEMBLY
James B. Kruger, Oxford, and Gerard T. LePage, Waterbury, both of Conn., assignors to Scovill Manufacturing Company, Waterbury, Conn.
Filed June 18, 1973, Ser. No. 371,307
Int. Cl. A47g *29/10*
U.S. Cl. 70—456 B **2 Claims**

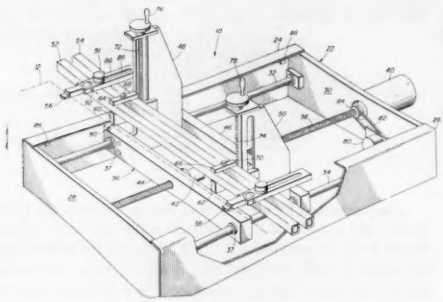


A key container assembly comprising a key plate having a barrel with laterally spaced openings and slots, key-holding loops with attaching discs received into the slots, the end of the barrel forming a bar normally blocking the entry of the disc of the loop into the opening and hence effectively blocking release of the loop.

3,826,119
NUMERICAL CONTROL SYSTEM FOR PRESS BRAKES AND THE LIKE

Alan P. Marotto, Lexington, Mass., assignor to Automec, Inc., Waltham, Mass.

Filed June 5, 1972, Ser. No. 259,439
Int. Cl. B21d *11/22*
U.S. Cl. 72—36 5 Claims

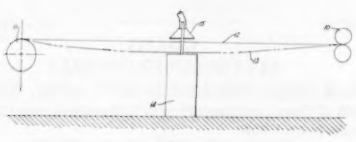


A numerical control system is provided for use with press brakes and the like for automatically gauging in sequence a plurality of different bending operations. The system includes a gauge mounted to the press brake bed and is provided with a carriage driven by a motor-operated lead screw which moves the carriage to different gauging positions in accordance with predetermined instructions set into a controller. A pivoted gauging finger is mounted on the carriage to serve as a gauge stop for the work fed between the punch and die of the brake. A closed loop digital to analog servo system is provided in the control of the carriage to cause rapid and precise movement of the gauge in accordance with the programmed instructions.

3,826,120
REDUCTION OF SLACK IN METAL COIL SLITTING LINES

Roger A. Ketterer, Cincinnati, Ohio, assignor to Cincinnati Incorporated, Cincinnati, Ohio

Filed July 13, 1973, Ser. No. 379,094
Int. Cl. B21b *45/00*; B21f *11/00*
U.S. Cl. 72—46 4 Claims

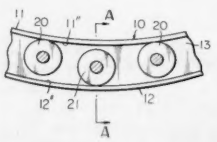


The application discloses the reduction of slack in metal coil slitting lines, wherein a relatively wide strip is passed through a slitting instrumentality by which it is slit into a plurality of narrower strips which are then recoiled by a common recoiling device. Because of variations in thickness across the width of the original strip, the recoiled narrower strips which are being rewound simultaneously, will have various degrees of slack, resulting in some loose coils. According to the invention, an electrostatic fluidized bed is disposed between the slitting device and the recoiler, below the slit strips. The bed contains a suitable powder, such as mica; and as any one of the slit strips sags toward the fluidized and charged bed, it picks up some of the charged powder particles. The pick-up is proportionate to the amount of sag, or proximity of the sagging strip to the bed. The picked up powder is trapped in the wraps of the strip on the recoiler, effectively thickening the wrap, and thus restores tension and results in taking up the slack. The system is self-compensating and automatic.

3,826,121
METHOD AND APPARATUS FOR COLD BENDING H-SHAPED STEEL

Kazuyoshi Yashiro, No. 19 Miharashi-cho 2-chome, Kue-shi, Hiroshima-ken, Japan

Filed Feb. 27, 1973, Ser. No. 336,350
Int. Cl. B21d *5/14*
U.S. Cl. 72—170 4 Claims

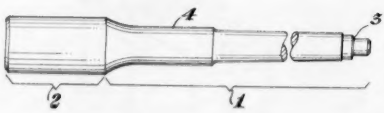


A method and apparatus for bending a grooved, H-shaped or the like shaped steel workpiece having a center web and two parallel flanges extending at right angles to and connected by the web in the plane of the web by cold-bending in which the inner surface of one of the two flanges has applied thereon an outward force by a pressure roller means and the inner surface of the other flange also has applied thereon an outward force by a pair of spaced pressure receiving roller means positioned on the opposite sides of the pressure roller means whereby the shaped steel workpiece has imparted thereto a bending moment without applying any buckling load on the web across the width thereof and the workpiece is then transferred in the longitudinal direction thereof with the workpiece held in pressure contact with the rollers.

3,826,122
MANDREL FOR EXTRUDING TUBING

Karl F. Braeuninger, 535 Plantmore Dr., Ferguson, Mo. 63135

Division of Ser. No. 55,531, July 16, 1970. This application Mar. 24, 1972, Ser. No. 237,690
Int. Cl. B21c *23/04*
U.S. Cl. 72—264 6 Claims



A mandrel and mandrel-dummy block assembly for extrusion of tubing is disclosed wherein the mandrel has a shaft cross sectional area so related to the working section cross sectional area that the mandrel will stay in place without attachment to the dummy block. Such mandrel reduces the problems of mandrel necking down and breakage.

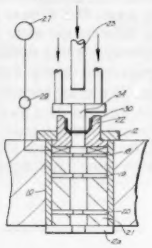
3,826,123
WALL IRONING TOOL PACK WITH REDRAW DIE

Richard J. Hasselbeck, Houston, Ohio, assignor to The Stolle Corporation, Sidney, Ohio

Filed June 11, 1973, Ser. No. 368,722
Int. Cl. B21d *22/28*
U.S. Cl. 72—349 4 Claims

A wall ironing tool pack is disclosed, incorporating one or more wall ironing dies and a redraw die to reduce the cup

shaped work piece to dimensions for wall ironing, wherein said reduction may amount to about 30 percent, and whereby the risk of fractures, or wrinkling of the work piece is avoided. One or more ironing dies and the redraw die are held in a holder and clamped by means of an annular hydraulic cylinder and piston disposed between any two rings. Hydraulic pressure supplied to said cylinder to actuate said piston is controlled by means of a regulator, whereby adjustment of the pressure on the cup to be redrawn may be made rapidly during operation, to insure the desired redrawn cup for subsequent wall ironing without risking fractures if the pressure is too high, or wrinkles if the pressure is too low, and maintaining the several dies in clamped relation.



3,826,124

MANUFACTURE OF TUBES WITH IMPROVED METALLIC YIELD STRENGTH AND ELONGATION PROPERTIES

Ivan Baksay, Albany, Oreg., assignor to Zirconium Technology Corporation, Albany, Oreg.

Filed Oct. 25, 1972, Ser. No. 300,474
Int. Cl. B21d *3/00*
U.S. Cl. 72—367 **7 Claims**

A process for the manufacture of metal tubes, wherein the tubes exhibit improved yield strength, axial elongation and circumferential elongation properties. The tube is initially cold worked to obtain final size, which develops a certain strength to the metal of the tube and produces uniformity in the dimensions of the tube. A subsequent annealing increases the ductility of the metal in the tube. After annealing the tube is stretched significantly with the simultaneous reduction of the diameter thereof, to obtain a final product where the wall of the tube has been work hardened by such stretching. The latter operation increases the yield strength in the tube wall without failure occurring. A process of the type indicated where the annealing is a recrystallizing annealing, effective to produce recrystallizing of the microstructure of the tube's metal, and wherein the stretching is done without internal or external support of the tube wall.

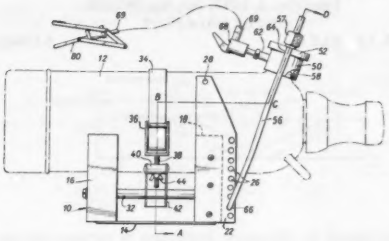
3,826,125

PRESSURE VESSEL TESTING

Michael John Cotton, Mytholmroyd, England, assignor to NU Swift International Limited, Yorkshire, England

Filed Mar. 9, 1973, Ser. No. 339,885
Int. Cl. G01l *27/00*
U.S. Cl. 73—4 R **12 Claims**

An indicator on a pressure vessel such as a fire extinguisher adapted to show internal fluid pressure is tested by applying an external source of fluid pressure to the indicator acting in opposition to the internal pressure, preferably on a special test stand having arrangements for supporting the pressure vessel and applying an external pressurized chamber in sealing relation onto the indicator, and observing the effect of the applied external pressure on operation of the indicator.

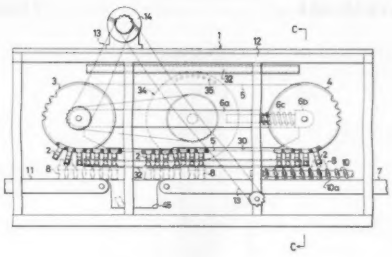


3,826,126

APPARATUS FOR TESTING PRESSURE RESISTANCE OF CONTAINERS

Tomita Yasuhiro, Nishinomiya, Japan, assignor to Yamamura Glass Kabushiki Kaisha, Nishinomiya Hyogo, Japan

Filed Oct. 27, 1972, Ser. No. 301,508
Claims priority, application Japan, Dec. 22, 1971, 46-104984
Int. Cl. G01m *3/02*
U.S. Cl. 73—37 **4 Claims**

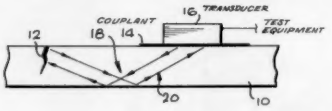


An apparatus comprising drive means for bringing a great number of pressure resistance testing heads successively at equal spacing to a testing station at a speed equal to the speed of travel of containers to be tested, feed means for sending the containers to the testing station at the same spacing as the testing heads, means for inserting nozzles of the testing heads into the containers respectively at the testing station, pressure fluid supply means for supplying a low pressure fluid through the testing heads into the containers and subsequently supplying high pressure fluid into the containers, means for causing the testing heads to seal the mouths of the containers and chuck the containers immediately before the supply of the high pressure fluid, means for permitting the testing heads to hold the containers in suspension during the supply of the high pressure fluid, and means for freeing the containers from the chucking and discharging the same at the terminal end of the testing station after testing.

3,826,127
COMPOSITION FOR ULTRASONIC INSPECTION OF OBJECTS AND METHOD FOR EMPLOYING SAME

Orlando G. Molina, Westminster, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 4, 1972, Ser. No. 295,059
Int. Cl. G01n 29/04
U.S. Cl. 73—67.5 R 6 Claims

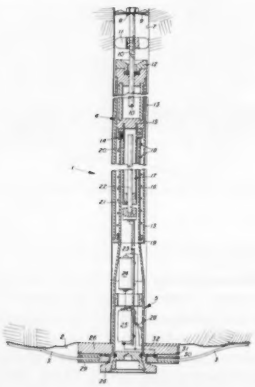


Composition for ultrasonic inspection of surface and subsurface flaws and discontinuities in bodies, in the form of an aqueous gel containing an N-alkyl-2-pyrrolidone having a short alkyl chain, preferably N-methyl-2-pyrrolidone, a water soluble surfactant, e.g. a nonyl phenyl ether of polyethylene glycol, and silica, preferably in fine powder form, suspended uniformly in the gel. The composition or gel is applied to a surface of a body such as a metal aircraft structural part, and a probe or transducer of an ultrasonic testing device is contacted or pressed against the gel and the transducer is caused to move or slide in various directions on the gel to transmit ultrasonic energy through the gel and the object, to inspect the object and locate any surface or subsurface flaws or discontinuities.

3,826,128
SURFACE DEFORMATION INDICATING APPARATUS

James R. McVey, and Thomas O. Meyer, both of Spokane, Wash., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Feb. 1, 1973, Ser. No. 328,822
Int. Cl. G01b 5/30
U.S. Cl. 73—88 E 7 Claims



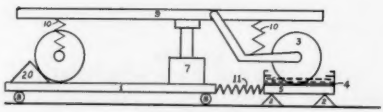
An apparatus to indicate deformation of a surface such as the interior of a mine, to which it is attached. An anchor bolt assembly with one electrical contact is rigidly fixed into the surface. A movable pressure plate assembly with another electrical contact, engageable by the first contact on the bolt assembly is placed against the surface. When this plate is moved by surface deformations, it causes the contacts to engage each other which results in the actuation of a sensing device. The sensing device can either actuate a transmitter to transmit a frequency modulated signal of a fixed or variable frequency or it can actuate a recording device that records data on the deformation. Several extendable arms may also be included to actuate a transmitter when overhead rocks or other objects fall near the apparatus. The arms may be arranged in a spider-like pattern around the periphery of the pressure plate assembly to which it is pivotally attached. Two spaced electrical contact rings associated with the arms are closed when an object pivots one of the arms. This closure can then actuate the same transmitter the deformation plate could actuate which results in a fixed frequency warning signal being transmitted.

A series of the signals from several transmitters may be fed to a common receiver. By making each signal different and associating the physical location of a given transmitter with a given signal, the deformation that occurs at a given point may be readily segregated from the others. This allows the sending of a warning signal or other type signal to persons in the danger zone.

3,826,129
AUTOMOTIVE VEHICULAR DYNAMOMETER

John W. Wiss, 3316 Brookdale Dr., Pittsburgh, Pa. 15241

Filed Aug. 15, 1972, Ser. No. 280,865
Int. Cl. G01l 5/13
U.S. Cl. 73—117 3 Claims



An improved testing machine for operating an automotive-vehicle under power while it is standing still. This type of operation is desired in such endeavors as service diagnosis and measurement of exhaust emissions. In this device, power is absorbed by friction between the vehicle's driving wheels and a stationary dynamometer member. Overheating of the tire is prevented by inserting a fluid such as water or air at the juncture of the tire and dynamometer, or otherwise cooling the dynamometer absorption plate. Load may be adjusted by raising or lowering the vehicle, and measured as a vehicle thrust against the dynamometer. Speed may be measured from the motion of the driving wheel. Horsepower may be calculated automatically to provide a continuous presentation of speed and horsepower to the test operator. This vehicular dynamometer possesses many of the characteristics of the traction or drawbar dynamometers, except that the vehicle remains essentially stationary.

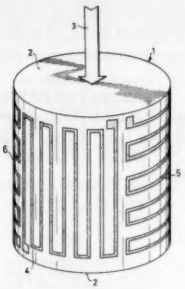
3,826,130
ELECTRO-MECHANICAL POWER OR PRESSURE MEASURING TRANSFORMER

Gunter Pusch, Dilsberg, Germany, assignor to Industrie-Automation GmbH & Co., Kurpfalzring, Germany

Filed Sept. 18, 1972, Ser. No. 290,104
Claims priority, application Germany, Sept. 16, 1971, 2146339
Int. Cl. G01l 5/00
U.S. Cl. 73—141 A 1 Claim

An electro mechanical power- or pressure-measuring-transformer with a body elastically deformable under the influence

of the value to be measured. The deformation of the body is transformed in corresponding electric values, wherein the elastic deformable body comprises non-metallic, inorganic working material constituting a ceramic material.



3,826,131
DEVICE FOR MEASURING A DEFINED FORCE COMPONENT

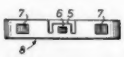
Gunter Pritschow, Berlin, Germany, assignor to Licentia Patent-Verwaltungs-GmbH, Frankfurt, Germany

Filed Oct. 2, 1972, Ser. No. 294,098

Claims priority, application Germany, Sept. 30, 1971, 2149438

Int. Cl. G01l 1/22

U.S. Cl. 73—141 A **2 Claims**



A defined component of the force acting on a body is measured by wire strain gauges located in the path of the force component and providing the input for a bridge circuit. The strain gauges are located on a member which fits between the elements which create the force. This member also includes a region which is isolated from the force and which carries a device subjected to the same temperature as the strain gauges and connected in the bridge circuit to act as a temperature compensator which compensates for temperature variations experienced by the wire strain gauges.

3,826,132
DEVICE FOR PRODUCING A VISUAL DISPLAY OF THE TRANSVERSE TENSION PROFILE OF A MOVING STEEL STRIP

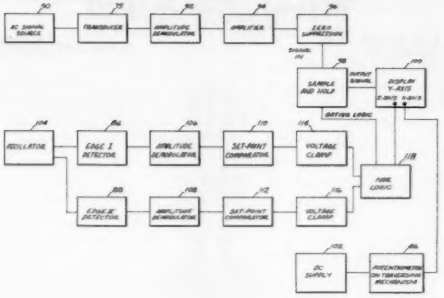
Martin J. Fetner, and Glenn L. Hunsicker, both of Allentown, Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed June 1, 1973, Ser. No. 365,950

Int. Cl. G01l 5/10

U.S. Cl. 73—143 **4 Claims**

A traversing mechanism, carrying a transducer and two proximity detectors, is continuously scanned transversely of a moving strip and produces a signal which is converted into a visual display indicative of the longitudinal tension in the strip.



3,826,133
APPARATUS FOR SAMPLING FLUIDS FLOWING IN A PRODUCTION WELL

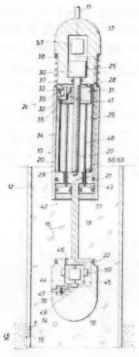
Yves Nicolas, Versailles, and Andre Landaud, Maisons Alford, both of France, assignors to Schlumberger Technology Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 220,764, Jan. 26, 1972, abandoned. This application Nov. 15, 1972, Ser. No. 306,759

Claims priority, application France, Jan. 28, 1971, 71.02766

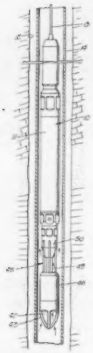
Int. Cl. E21b 47/00

U.S. Cl. 73—152 **28 Claims**



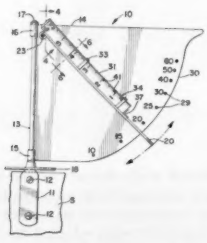
In the preferred embodiments of the invention disclosed herein, new and improved fluid-investigating tools adapted for positioning in a production well are respectively provided with a selectively closed chamber adapted to entrap a representative sample of the well fluids flowing past the tool so that the fluid phases of different densities will become segregated. The tools are uniquely arranged to provide surface signals which are representative of the density of the segregated fluid phases at discrete intervals in the sample chamber for determining the volumetric proportions and densities of the well fluids.

3,826,134
ROTARY FLOW METER FOR WELLS
Leonidas C. Miller, 1321 Sombrero Dr., Monterey Park, Calif. 91754
Filed Aug. 9, 1971, Ser. No. 169,944
Int. Cl. E21b *47/10*
U.S. Cl. 73—155 **7 Claims**



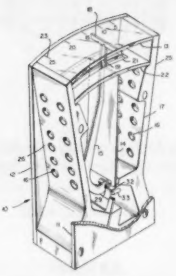
A flow meter for measuring rate and direction of fluid flow at different elevations in a well employs a housing lowered into the well on a wire line. A vaned rotor carried by the housing is contacted and caused to rotate by well fluid moving longitudinally in the well. A sealed chamber within the housing contains a speed reducer, a revolution counter or stepper and a recorder. The sealed chamber prevents well pressure from contacting these devices. One wall of the sealed chamber is formed as a hollow hemispherical dome of non-magnetic material, and a magnetic coupling operates across the dome to connect the rotor shaft to the input shaft of the speed reducer. In one form of the invention, the revolution counter or stepper turns the recorder drive shaft intermittently through a small arc and then returns it to its initial position. In another form of the invention, the recorder drive shaft is driven intermittently by the revolution counter through a small arc of travel but is not returned after each impulse to its initial position.

3,826,135
SWINGING RAIN GAUGE
Elmer Hollmann, 618 E. Ashton, Grand Island, Nebr. 68801
Filed Mar. 30, 1973, Ser. No. 346,599
Int. Cl. G01w *1/14, 1/02*
U.S. Cl. 73—171 **6 Claims**



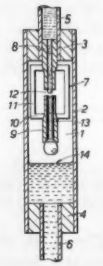
A rain gauge which accurately measures rainfall regardless of the presence of wind, comprising a vertical support rod, a wind operated directional fin, said fin rotatably mounted on said rod for rotational movement responsive to the direction of wind, a wind operated rain gauge support pivotally connected to said fin about a horizontal axis adjacent said rod and movable with said fin and pivotally movable about said horizontal axis responsive to the velocity of wind, and rain collecting receptacle means carried by the support and movable therewith for accurately collecting and measuring rainfall regardless of the presence or direction or velocity of wind.

3,826,136
ANEMOMETER DEVICE
Nai-Chong Chang, 6 Robbin Hill Rd., Scarsdale, N.Y.
Filed June 7, 1972, Ser. No. 260,398
Int. Cl. G01p *5/04*
U.S. Cl. 73—189 **2 Claims**



An anemometer device which utilizes a blade that is mounted within a case whereby it can rotate about a center which is pivotless. The case has holes therein for allowing air to enter and depart. The entering air moves the blade proportionately to the force the air is exerting against the blade, the force being the velocity of the air relative to the blade. The top of the case has markings corresponding to air speed and when the blade lines up with one of the markings the air speed can be determined. A maximum speed indicator moves with the blade but is biasedly attached to the case so that it remains at the maximum air speed indicated.

3,826,137
METHOD FOR MEASURING THE RATE OF FLOWS OF LIQUIDS
Ellis Whiteside Clarke, 47 Deramare Dr., Belfast, England
Filed May 31, 1972, Ser. No. 258,370
Claims priority, application Great Britain, June 2, 1971, 18518/71; Jan. 3, 1972, 31/72
Int. Cl. G01f *1/00*
U.S. Cl. 73—194 R **6 Claims**



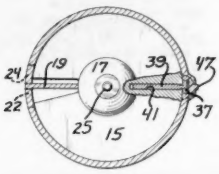
A liquid flow rate is measured by forming the liquid into a stream of drops of a controlled size and counting the number of drops formed during a timed period. The drops are formed at an orifice and their size is controlled by providing a surface

close to the orifice which the drops contact as they form and are thereby drained. The surface close to the orifice may be the surface of a body of the liquid supported by capillary action on a structure provided adjacent to the surface. Further the orifice may be the opening in a nozzle which is fixed together with said supporting structure in a chamber closed apart from an inlet and an outlet for the liquid.

3,826,138
THRUST BEARING

Howard E. Rittenhouse, Rogers, Ark., assignor to Crane Co., New York, N.Y.

Filed Jan. 29, 1973, Ser. No. 327,464
Int. Cl. G01f *3/08*
U.S. Cl. 73—258 **3 Claims**

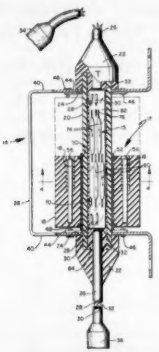


A thurst bearing insert positioned in a measuring chamber having an arcuate slot thereon adapted to receive and guide the thrust roller of a nutating disc when the disc is nutated by fluid passing through the meter.

3,826,139
LIQUID LEVEL INDICATING APPARATUS

Albert J. Bachman, Bristol, Conn., assignor to DeLaval Turbine, Inc., Princeton, N.J.

Filed Mar. 19, 1973, Ser. No. 342,877
Int. Cl. G01f *23/10, 23/12*
U.S. Cl. 73—311 **14 Claims**

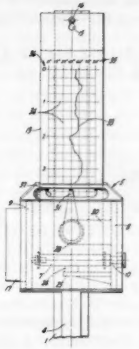


A liquid level indicating apparatus provides remote digital indication of liquid level in a tank or the like and comprises a plurality of discrete liquid level indicating stations releasably mounted at vertically spaced intervals along a wall of the tank and connected together in electrical series by elongated flexible electrical conductors to define a voltage divider for transmitting electrical signals to a receiver or indicating meter. Each station has a float which carries permanent magnets and moves vertically between stops in response to a predetermined liquid level condition in the tank to operate a magnetically responsive tap switch, whereby to alter the effective electrical resistance of the voltage divider.

3,826,140
TEMPERATURE RECORDER

George Nakagawa, P.O. Box 4145, Modesto, Calif. 95353, and Bill Youmans, Box 875, Zephyr Cove, Nev. 89448

Filed July 23, 1973, Ser. No. 382,078
Int. Cl. G01k *1/02;* **G01d** *9/12, 15/28*
U.S. Cl. 73—343.5 **13 Claims**

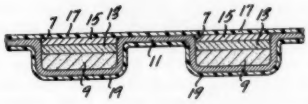


A temperature recorder which produces a continuous graphic record, scribed on tape, of the temperature existing in an enclosure (such as a refrigerated railroad car) curing a given period of time (e.g., the transit time of such a railroad car). The recorder comprises a guided, downwardly movable case—suspended by an upper-end anchored tape—which slowly gravitationally descends upon unwinding, under influence of the weight of said case and at a controlled rate, of the tape from a spool on such case, and the latter being fitted with a temperature-responsive device including a variably movable stylus which progressively scribes on the tape as the case so descends; the tape having a graph thereon which reflects the scribing in terms of temperature in relation to time.

3,826,141
TEMPERATURE INDICATOR

Charles G. Pickett, Andover, and Desh D. Chadha, Dover, both of N.J., assignors to Bio-Medical Sciences, Inc., Fairfield, N.J.

Division of Ser. No. 120,891, March 4, 1971, Pat. No. 3,704,985. This application Aug. 2, 1972, Ser. No. 277,065
Int. Cl. G01k *11/08, 11/12*
U.S. Cl. 73—356 **5 Claims**



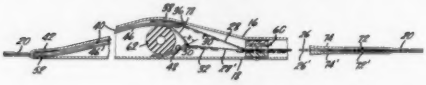
Temperature indicators are provided comprising a heat-conductive carrier having at least one, but preferably a plurality of regions (cavities) thereon, each region containing a thermally responsive substance which undergoes a change of state at a precise and predetermined temperature different from the temperature of the change of state of the thermally responsive substance in any other region. The temperatures at which such changes of state occur are detected visually by an indicator system which is intimately associated with the thermally responsive materials in these regions. The incorporation of certain organic compounds into the indicator system ac-

celerates visual detection of such change of state, thus permitting rapid measurement of the temperature corresponding to the incipient fusion of the thermally responsive material in each region.

3,826,142
THERMOMETER PACKAGE

Berel Weinstein, Sparta, and Jimmie D. Scott, Parsippany, both of N.J., assignors to Bio-Medical Sciences Incorporated, Fairfield, N.J.

Filed Jan. 12, 1973, Ser. No. 323,301
Int. Cl. G01k *11/08*
U.S. Cl. 73—356 **6 Claims**

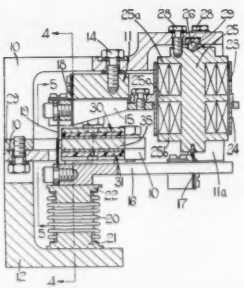


There is disclosed a sterile thermometer and package for the same in which the thermometer is provided with shield components to maintain the thermometer operative temperature indicating component out of contact until the thermometer is required for use, with the thermometer further having a removal roller associated with the shield components and operative to facilitate the ease with which the shield components are removed from the thermometer concurrent with removal of the latter from the package envelope.

3,826,143
FLUID PRESSURE TRANSDUCERS

Alan Thomas, Stratford-on-Avon, and Ronald Alfred Heath, Harborne, both of England, assignors to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Mar. 22, 1972, Ser. No. 237,024
Claims priority, application Great Britain, Mar. 26, 1971, 8218/71
Int. Cl. G01l *9/12*
U.S. Cl. 73—398 C **13 Claims**

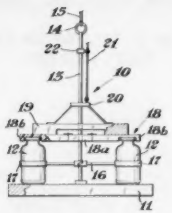


A fluid pressure transducer includes a body on which a bellows is mounted at one end. The other end of the bellows is connected to the free end of an elongated pivoted arm which guides the end of the bellows and prevents lateral displacement thereof. The free end of the arm is also connected to a displacement detector and by a flexible connector to an electromagnetic force applying device.

3,826,144
APPARATUS FOR SAMPLING LIQUIDS

Glenn R. Wessels, Lake Jackson, Tex., assignor to The Dow Chemical Company, Midland, Mich.

Filed June 25, 1973, Ser. No. 373,072
Int. Cl. G01n *1/12*
U.S. Cl. 73—425.4 R **6 Claims**

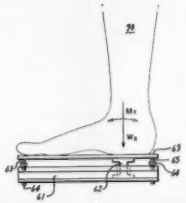


The apparatus disclosed herein is useful for collecting liquids, particularly water. A preferred form of the apparatus includes a platform, which supports one or more open-end containers. A rigid bar is positioned upright to the platform, and the lower end of the bar is fastened into the platform. A line is attached to a fastener ring at the top end of the bar. The line is used to raise and lower the unit into a liquid body to collect the sample in the containers. When the liquid fills each container, the apparatus is raised to the surface and a hinged closure assembly seals the open end of each container.

3,826,145
ELECTRICAL ATAXIAMETER

Keith H. McFarland, 13661 La Palma Rd., Los Altos Hills, Calif. 94022

Filed Mar. 1, 1973, Ser. No. 336,914
Int. Cl. A61b *5/00*
U.S. Cl. 73— 432 R **6 Claims**



A device and accompanying instrumentation measures involuntary tremor and unsteadiness of the human body when standing in an erect position upon the device. Novel construction and combination produces highly accurate readings in spite of difference in weights and weight distribution of the subject. Correlated data makes possible studies revealing learning potentials, brain damage, neuro-muscular responses, effect of diet and drugs, and aids in evaluation of the treatment of related syndromes.

3,826,146

METHOD AND APPARATUS FOR IMBALANCE DETERMINATION

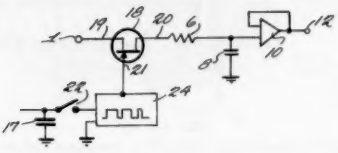
Richard Muller, Worfelden, Germany, assignor to Gebr. Hofmann KG

Filed June 19, 1973, Ser. No. 371,500

Claims priority, application Germany, July 28, 1972, 2237171

Int. Cl. G01m *1/22*

U.S. Cl. 73—462 **7 Claims**



An improved method and apparatus for measuring imbalance of a rotary test body whereby the imbalance vector signal generated by a conventional wheel balance machine is split into rectified components and integrated to eliminate residual waves and interference frequencies, the integration time being extended with increasing measuring time. A logic element, for example, a field effect transistor, connected between the vector splitting circuit and integrator is alternately rendered conductive and non-conductive with the times of non-conductive increasing with respect to the times of conduction with increases in time.

3,826,147

CONSTANT SPEED HYDRAULICALLY CONTROLLED TORIC TRANSMISSION WITH CONCENTRIC TWO PISTON VALVE AND GOVERNOR MEANS

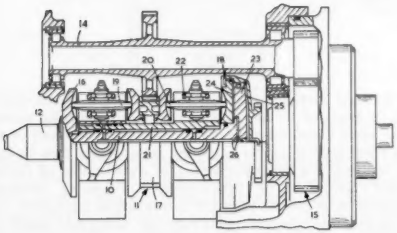
Raymond Sharpe, Mirfield, and James Christopher Herbert Triffit, Baildon, both of England, assignors to Rotax Limited, Birmingham, England

Filed July 27, 1972, Ser. No. 275,871

Claims priority, application Great Britain, July 27, 1971, 35322/71

Int. Cl. F16h *15/38*

U.S. Cl. 74—200 **5 Claims**



A variable-ratio frictional drive gear comprises two axially spaced torus discs between which there is a set of circumferentially spaced drive rollers in frictional rolling contact with toroidal surfaces on the discs. Each roller is rotatably mounted in a roller carriage which can tilt about an axis at right angles to the axis of rotation of the roller so as to vary the distances from the gear axis at which the roller engages respectively the two discs, thus varying the drive ratio of the gear. The variable ratio frictional drive gear further includes a first piston which is slidable in a second hollow piston under the influence of hydraulic fluid wherein axial movement of the first piston is arranged to effect tilting movement of the roller carriage. Means are also provided to reduce the pressure, which is, in use, applied to the first piston by the hydraulic fluid, such reduction occurring when the first piston reaches a predetermined axial position relative to the second piston. The latter is slidable in a cylinder under the influence of control fluid supplied by a governor, the control fluid being independent of the hydraulic fluid which influences the slidable movement of the first piston in the second piston.

3,826,148

CONSTANT SPEED OUTPUT TORIC TRANSMISSION WITH HYDRAULIC CONTROLS CONSISTING OF A ROTATABLE SPIDER, AN ACTUATING VALVE AND GOVERNOR MEANS

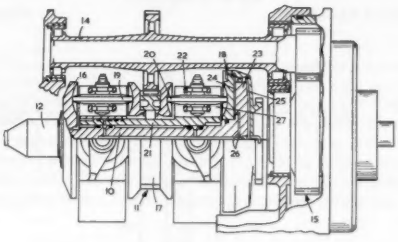
George Maurice Martin Magill, Menston, England, assignor to Rotax Limited, Birmingham, England

Filed July 27, 1972, Ser. No. 275,883

Claims priority, application Great Britain, July 27, 1971, 35323/71

Int. Cl. F16h *15/38*

U.S. Cl. 74—200 **4 Claims**



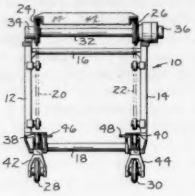
A variable-ratio frictional drive gear comprises two axially spaced torus discs between which there is a set of circumferentially spaced drive rollers in frictional rolling contact with toroidal surfaces on the discs. Each roller is rotatably mounted in a roller carriage which can tilt about an axis at right angles to the axis of rotation of the roller so as to vary the distances from the gear axis at which the roller engages respectively the two discs, thus varying the drive ratio of the gear. The end portions of each roller carriage are slidably and rotatably supported by a support member whereby the roller carriages can be moved tangentially in order to control indirectly the ratio angle of the rollers. One end portion of each roller carriage has a piston which is slidable in a pressure cylinder in the support member and the other end portion has a guide portion slidable in a guide cylinder in the support member. The latter is mounted about a shaft to which the torus discs are rotatably connected, the support member being rotatable relative to the shaft and being urged, in use, against the valve member of a valve which is connected in an hydraulic control circuit arranged to control the tilting movement of the roller. The arrangement is such that the pressure exerted by the support member on the valve member is dependent upon the reaction force existing between the rollers and the torus discs so that an increase (decrease) in the pressure exerted by the support member and the valve member will cause an increase (decrease) of hydraulic fluid pressure in the control circuit.

3,826,149

SEMI-AUTOMATIC HYDRAULIC CHAIN ADJUSTER

Gary P. Freese, Joliet, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 23, 1971, Ser. No. 211,320
Int. Cl. F16h 7/12
U.S. Cl. 74—242.8 **6 Claims**



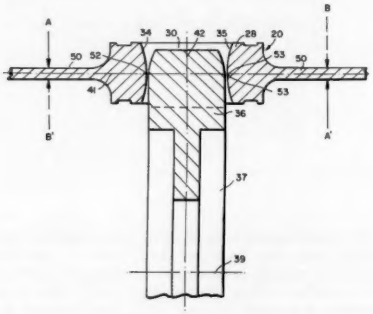
A system for adjusting an endless belt or chain is provided which either automatically or semiautomatically adjusts belt tension.

3,826,150

LINK CONFIGURATION FOR DISTRIBUTION OF TRANSVERSE LOADS ON DRIVE AND DRAG CHAIN

Karl V. Palmaer, Carmichael, Calif., assignor to KVP Company, Inc., Sacramento, Calif.

Filed May 8, 1972, Ser. No. 251,476
Int. Cl. F16g 13/07
U.S. Cl. 74—250 R **4 Claims**



Drive and drag chain links of novel configuration are disclosed. Specific link configurations including a recess or aperture having shaped side walls to enable distribution of transverse loads and reduce sprocket tooth insertion losses are described. A link configuration for providing bow chain action is disclosed.

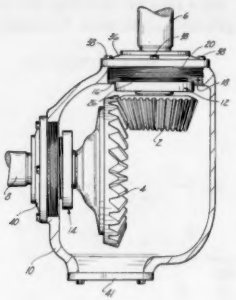
3,826,151

POWER TRAIN

Erwin F'Geppert, Novi, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 27, 1973, Ser. No. 336,293
Int. Cl. F16h 35/08
U.S. Cl. 74—400 **10 Claims**

Bevel gears are adjustable as to prevailing torque, tooth load, and backlash. A bearing pod supporting a gear shaft is externally threaded and the gear case is internally threaded. An annular driver between the pod and the case carries internal and external threads of different pitches but the same hand. Rotation of the annulus while pod and case are held stationary provides micro-adjustability of the associated gear away from or toward the other gear to achieve the desired mesh as to backlash, tooth contact pattern, and prevailing torque.

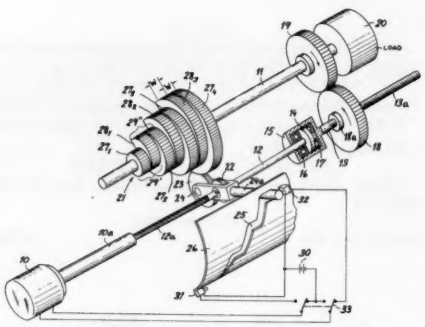


3,826,152

VARIABLE-RATIO GEAR TRANSMISSION

Kirill M. Alexeev, and Antonina Alexeev, both of 415 E. 52nd St., New York, N.Y. 10022

Filed May 11, 1973, Ser. No. 359,530
Int. Cl. F16h 1/18
U.S. Cl. 74—424.5 **10 Claims**

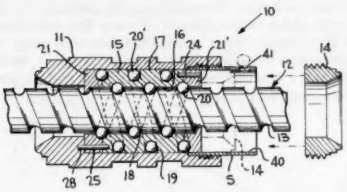


A toothed body of generally conical shape, on an output shaft, is engaged by one of two constantly meshing pinions whose mate slides on a driven input shaft. The teeth of the body form several axially adjoining zones which may be successive turns of a helicoidal spiral, or a succession of coaxial arcuate shoulders of progressively increasing diameter separated by eccentric ramps of intermediate curvature. The two pinions are mounted on a carriage, swingable about the input shaft, with the off-axial pinion biased into permanent engagement with the toothed body. At least in the case of a helicoidally spiraling track, a worm drive coupled with the output shaft causes a continuous axial displacement of the carriage during rotation of the input shaft to provide a substantially continuously changing transmission ratio.

3,826,153
BALL-SCREW MECHANISM

Richard H. Sheppard, c/o R. H. Sheppard Co., Inc., Hanover, Pa. 17331

Filed Sept. 6, 1972, Ser. No. 286,695
Int. Cl. F16h 55/04
U.S. Cl. 74—459 10 Claims

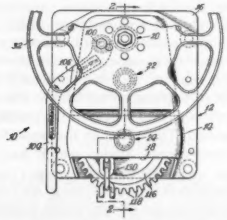


An easily machined ball-screw mechanism of compact design and characterized by improved smoothness of operation is disclosed. In the mechanism, a tubular nut is encased by an outer removable enclosing member and is operatively engaged with a screw member having a helical groove. The tubular nut has two helical guideways, one on the inner circumferential surface, in opposed relationship with said helical groove, and one in the return direction on the outer circumferential surface. A first set of bearing members is held captive between the inner helical guideway of the nut and the groove, and a second set is held captive in the outer guideway of said tubular nut by the enclosing member. Separate transfer discs positioned at each end of the tubular nut have an open grooved ramp spiraling from cooperative adjacency with the inner guideway to the outer guideway to transfer bearing members between said first and second sets. A sleeve adapted to mate with the enclosing member and the nut assist in loading the bearing members.

3,826,154
MEANS FOR CONTROLLING CHAIN TAKE-UP IN A HAND BRAKE MECHANISM

Ulo Motus, Hinsdale, and Richard C. Hammarlund, Clarendon Hills, both of Ill., assignors to Miner Enterprises, Inc., Chicago, Ill.

Filed Aug. 7, 1972, Ser. No. 278,188
Int. Cl. G05g 1/08; F16h 57/10
U.S. Cl. 74—505 7 Claims

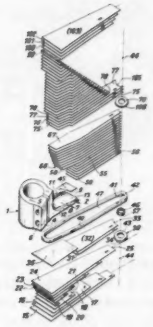


A hand brake mechanism having a rotatable operating spindle, a rotatable pinion adapted to be coupled to the operating spindle, and a rotatable winding drum unit including a gear meshing with the pinion and a drum upon which brake chain may be wound. The pinion has a plurality of standard teeth of uniform face width and at least one special tooth with a lateral extension portion, the gear has a plurality of teeth with stop means intermediate at least two adjacent of the teeth at the ends thereof, and the lateral extension portion of the special tooth of the pinion is engageable with the stop means to prevent interengagement of the special tooth between the two adjacent teeth of the gear whereby to limit rotation of the winding drum unit.

3,826,155
LIGHTWEIGHT LEVER FOR HIGH MECHANICAL STRESSING

Jochen Muller, Winterthur, Switzerland, assignor to Sulzer Brothers Ltd., Winterthur, Switzerland

Filed May 9, 1973, Ser. No. 358,818
Claims priority, application Switzerland, May 12, 1972, 007030/72
Int. Cl. G05g 1/04; D03d 49/38; C09j 5/06
U.S. Cl. 74—519 21 Claims

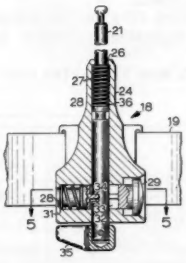


The lever is constructed of a hub and a lever arm of composite structure which is secured to the hub. The lever arm is made of one or more strips of resin-impregnated carbon fibers cut from a board of like material. The boards are commercially prepolymerized to a predetermined extent. In addition, a loop of carbon fibers can also be used with the strips to form the lever arm. The arm is secured to the hub by a pressing and curing operation or is secured in place by an overlying cover.

3,826,156
SECURED AIR RESERVE SYSTEM

Thomas F. Dornaus, 12450 Lakewood Blvd., Apt. 316, Downey, Calif. 90242

Filed Mar. 19, 1973, Ser. No. 342,559
Int. Cl. G05g 5/06
U.S. Cl. 74—527 6 Claims



In combination with a selfcontained underwater breathing apparatus that has a 2-position valve on an air tank to allow the diver to convert to his reserve supply by flipping the valve

to an alternate position, there is provided a shaft and tube means wherein the shaft is fixed to the valve actuator. The means is locked in a first position. By twisting the shaft, a lock is disengaged and the shaft is free to slide axially under the influence of a compression spring to actuate the valve to its alternate position.

3,826,157

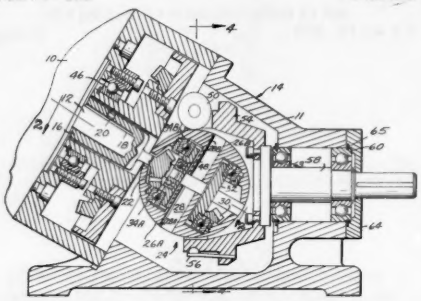
ROLLER/BALL TRANSMISSION

Charles C. Stoll, Rt. 1, Selbyville, Del. 19975

Filed Aug. 11, 1972, Ser. No. 279,773

Int. Cl. F16h *15/26*

U.S. Cl. 74—198 **9 Claims**



A power transmission including an input power source having an input shaft, a sphere connected through a gear system to the input shaft so as to rotate about its own axis when the input shaft is rotating, the axis of the sphere being in a plane perpendicular to the axis of the input shaft, and a control mechanism associated with the sphere for adjusting the orientation of the sphere's axis within the plane referred to. The transmission further includes an output spider, or ring including a plurality of rollers frictionally engaging the sphere, and therethrough transmitting a portion of the motion of the sphere to the output shaft which is attached to the spider. By controlling the orientation of the rotational axis of the sphere, the relative speeds of the spider and the sphere may be varied, and therefore the speed of the output shaft may be varied with respect to that of the input shaft. A loading device is provided to retain the axis of the sphere in a desired position but is set to release upon a high output torque so as to prevent scoring between the rollers and the surface of the sphere.

3,826,158

ELECTRONIC SHIFT COMMAND SYSTEM FOR MOTOR VEHICLE AUTOMATIC TRANSMISSION

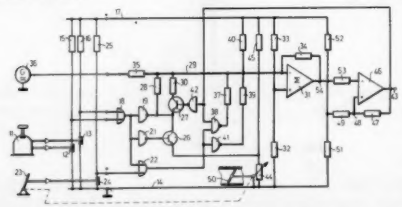
Ulrich Flaig, Stuttgart, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Oct. 19, 1972, Ser. No. 298,986

Claims priority, application Germany, Jan. 5, 1972, 2200409

Int. Cl. B60k *21/00;* **F16h** *3/74*

U.S. Cl. 74—866 **15 Claims**



A Schmitt trigger circuit, the switching of which is used to command shifting of an automatic transmission from one gear to another or back again, is driven by a summing amplifier responsive to a voltage proportional to vehicle speed, to a voltage inversely proportional to motor loading as indicated by the position of the throttle and also to two-valued conditions related to actuation of a kickdown switch and of a shift range limiting selector switch. The circuit design and logic is such that with the Schmitt trigger operating at fixed switching thresholds, the vehicle speed of no load upshift, full load upshift, kickdown upshift, no load downshift, full load downshift and kickdown downshift can be respectively determined by the independent choice of value for individual resistors in the circuit. When more than one shift stage is involved summing amplifiers and Schmitt triggers must be duplicated, but a common speed signal source and a common load signal source may be used.

3,826,159

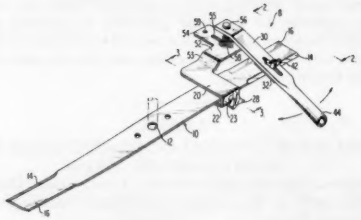
SHARPENER ATTACHMENT FOR LAWN MOWER BLADE

Lloyd W. Otto, Springfield, Mo., assignor to O-Max Industries, Inc., Springfield, Mo.

Continuation-in-part of Ser. No. 220,874, Jan. 26, 1972, Pat. No. 3,730,023. This application Feb. 13, 1973, Ser. No. 331,731

Int. Cl. B24b *3/36*

U.S. Cl. 76—82 **22 Claims**

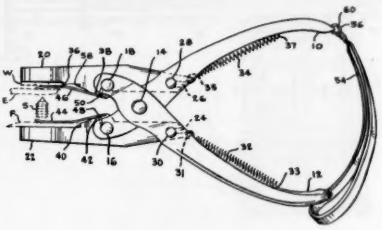


For sharpening a rotary lawn mower blade of the type which moves in a horizontal plane while cutting grass clippings or the like, an attachment device for sharpening the blade when not in use; the device including a main frame which is secured to the lawn mower blade radially inwardly from the cutting edge of the latter. The main frame extends across the blade beyond the rear or trailing edge of the blade where it then extends radially outwardly in a plane offset above the plane of the blade where it terminates rearwardly of the cutting edge of the blade to be sharpened. The offset in the main frame permits attachment to conventional blades which have formed on their trailing edges, upwardly extending vanes for purposes of creating a vacuum effect during cutting. The blade cutting edge is sharpened by means of a file insert removably held in an elongated holder arm pivotally mounted to the offset portion of the main frame so that it may be oscillated to engage the file along the cutting edge of the blade to sharpen the same. The file holder arm is spring mounted to the frame by means of a bolt and slot permitting adjustment of the arm relative to the frame. Similarly through means of an elongated slot in the arm file insert may be adjusted along the latter. If desired, a brace in the form of a bolt may be attached to the offset portion of the main frame to engage the lawn mower housing to further secure the main frame against movement during a sharpening operation.

3,826,160
EAR TAG CLAMPING TOOL

Eulalie H. Allen, 2725 S. Kingsbury Ave., Forth Worth, 76118; Earnest R. Allen, 1605 Phelps, Rt. 3, Seagoville, 75159, and Linwood W. Dickerson, P. O. Box 1133, La Porte, all of Tex. 77571

Filed Oct. 11, 1973, Ser. No. 405,273
Int. Cl. B25b *7/00, 7/02*
U.S. Cl. 81—5.1 R **11 Claims**



The invention starts with a pair of parallel jaw pliers of the type having a pair of handles articulated from a common pivot and having distal portions extending beyond the common pivot. Each of a pair of parallel jaws is pivotally attached to one of the distal ends of the handles about midway along the length of the jaw. The proximal end of each jaw, that extending toward the hand-held body of the handles, is connected to the one of the handles to which it is not pivotally attached by a slot-and pin arrangement, this structure insuring that the jaws will remain parallel to each other as they are forced closer together by squeezing the handles. The distal ends of the jaws are left free, and are modified in accordance with the invention.

The minimum modification is to slot one of the jaws and to attach a spring clip to the second. The slot is formed from the distal extremity and extends along the length of the jaw to terminate in a blind end, its purpose being to receive a shaft or stud member extending from an ear tag held in the second jaw, as the jaws are closed together, and then to permit withdrawal of the tool from the tag as attached to an animal's ear. The spring clip is secured to the inner surface of the second jaw, i.e., the surface facing a corresponding inner surface of the first jaw. Only the end closer to the pivot point of the handles is secured to the jaw, the balance of the spring clip extending toward the distal end of the jaw and, in relaxed position, touching or lying close to the jaw. As the base plate of an ear tag is slipped between jaw and spring clip, the spring clip exerts a clamping force on the plate to hold it in place.

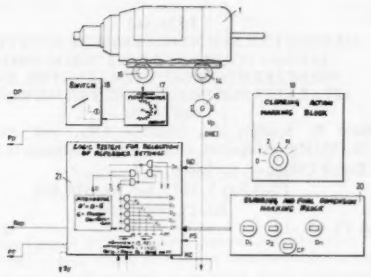
Further modifications include providing a similar spring clip on the first jaw to hold either a washer or a plate in such position that a hole therethrough is aligned with the shaft of the ear tag. In addition, the inner surface of either or both jaws may be notched to seat the member secured by the spring clip in aligned position.

3,826,161
MOVEMENT CONTROL DEVICE FOR A SINGLE OR MULTI-SPINDLE DEVICE ON AN AUTOMATIC LOOSE-HEAD MACHINE TOOL

Jean-Claude Simonin, Moutier, and Jean-Daniel Badoux, Nyon, both of Switzerland, assignors to Fabrique de Machines Andre Bechler S. A., Moutier/BE, Switzerland

Filed Sept. 28, 1972, Ser. No. 293,161
Claims priority, application Switzerland, Oct. 1, 1971, 14295/71
Int. Cl. B23b *3/00, 3/34*
U.S. Cl. 82—2 B **13 Claims**

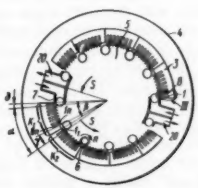
A movement control device for a single or multi-spindle device on an automatic loose-head machine tool. The machine tool comprises a mobile headstock for carrying a workpiece, a main camshaft for controlling the movement of the headstock, and tool means for carrying out first machining operations on said workpiece. The single or multi-spindle device is arranged facing the headstock for carrying out second machining operations on the workpiece simultaneously with the first machining operations and comprising fluid pressure-or electrically operated drive means to move the spindles axially. The movement control device comprises electrical control means for controlling the drive means so that in operation the axial displacement of each spindle is a function of both the speed of displacement and the position of the headstock.



3,826,162
MULTISPINDLE AUTOMATIC MACHINE TOOL

Grigor Arutjunovich Shaumian, Ananievsky pereulok 5, kv. 63, Moscow, U.S.S.R.

Filed June 29, 1973, Ser. No. 374,953
Int. Cl. B23b *9/06*
U.S. Cl. 82—3 **3 Claims**



Article-supporting spindles rotatable at a cutting speed from the main drive are mounted on a rotor associated with an angular feed drive and uniformly angularly spaced on this rotor. The cutters associated with radial abutments are mounted in cutter blocks rigidly mounted on the framework of the machine tool and are also uniformly angularly spaced about the rotor. The angular spacing of the cutter blocks is different from the angular spacing of the spindles by a value which is a multiple of the ratio of the angle of engagement of the cutter with an article at working of the latter to the number of the

cutter blocks, whereby in operation of the machine tool the angular feed of the rotor brings successive articles into contact with the cutters in sequential fashion.

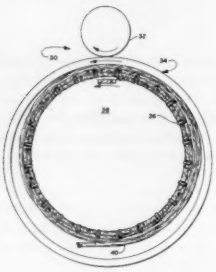
The multispindle machine tool can be successfully employed for working various articles shaped as bodies of rotation, where requirements as to the accuracy of the size and shape of the articles, as well as to their surface finish are particularly strict.

3,826,163

METHOD FOR APPLYING PRESSURE IN CUTTING ELONGATED FLEXIBLE MATERIAL INTO PREDETERMINED SHORTER LENGTHS, AND APPARATUS FOR PRACTICING THE IMPROVED METHOD

Albert E. Spaller, Jr., Johnson City, and Bruce W. Stockbridge, Kingsport, both of Tenn., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 5, 1973, Ser. No. 376,490
Int. Cl. D01g *1/04*
U.S. Cl. 83—18 **16 Claims**



Improved method for applying pressure in cutting elongated flexible material in the manner by which cutting occurs in the Keith U.S. Pat. No. 3,485,120 and the Coffin et al. U.S. Pat. No. 3,557,648, and to apparatus for practicing the method. The elongated flexible material is continuously wrapped in successive radially outwardly disposed layers around a circular cutter assembly having a plurality of knives spaced around the cutter assembly with the knife edges facing radially outwardly and with the innermost layer of material positioned in contact with the knife edges. The improved method involves applying against and over an arcuate surface portion of the continuously forming outer layer of material pressure distributed over an arc eccentric to and of greater radius than the radius of the arcuate surface portion. The apparatus for practice of the method preferably involves the use of a pressure ring encircling the layers of material wrapped around the cutter assembly and having a greater diameter than the wrapped layers, and eccentrically displacing the pressure ring relative to the cutter assembly.

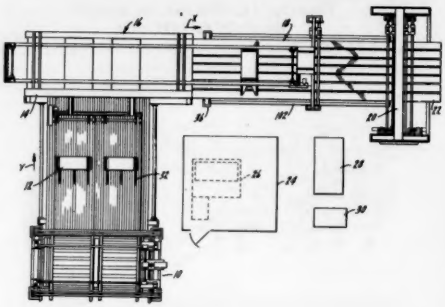
3,826,164

PANEL CUTTING METHOD AND APPARATUS

James W. Campbell, Fort Worth, Tex., assignor to Wetoma Corporation, Ft. Worth, Tex.

Filed Nov. 15, 1972, Ser. No. 306,935
Int. Cl. B26d *7/06*
U.S. Cl. 83—23 **25 Claims**

This is a method and apparatus for cutting accurately sized panels, for example, from sheets of particleboard, hardboard, fiberboard, plywood, plastics and other panel material, to be used in furniture making, home building, cabinets, etc. The method and apparatus are concerned with improving the speed and efficiency of existing machines and include what is



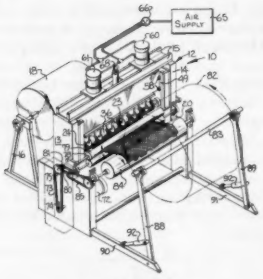
referred to as cascade gauging on a machine with either one or two axis of movement.

3,826,165

APPARATUS FOR PROCESSING FOAM SHEET MATERIAL

Grover C. Currie, Lenoir, and Brendan L. Doll, Patterson, both of N.C., assignors to Cellu Products Company, Patterson, N.C.

Filed Mar. 22, 1973, Ser. No. 343,678
Int. Cl. B26d *3/00;* **B26f** *1/20*
U.S. Cl. 83—110 **17 Claims**

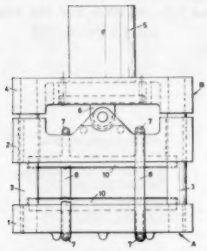


An apparatus for slitting and opening elongate foam sheet material or the like to form an open, net-like, cushioning material. The apparatus includes slitting means comprising a pair of cylindrical rolls forming a nip therebetween through which the advancing sheet material passes. One of the rolls has a plurality of axially extending rows of spaced cutting blades on the surface thereof, the rows extending along a small helix angle with respect to the axis of the roll. The blades of adjacent rows are staggered, and a pair of drawing rolls are positioned immediately downstream of the slitting means to open the incisions and thereby insure that the advancing sheet will not be retained by the cutting blades.

3,826,166
TIRE SHREDDING MACHINE

Norman Hemmings, Compton Abbas, Shaftesbury, Dorset, England

Filed Oct. 25, 1972, Ser. No. 300,802
Claims priority, application Great Britain, Oct. 27, 1971, 50023/71; Mar. 17, 1972, 12601/72; July 14, 1972, 33002/72
Int. Cl. B26d 7/18; B29h 19/00
U.S. Cl. 83—132 3 Claims

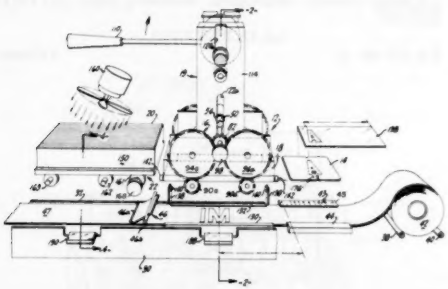


A tire shredding machine comprises a pair of relatively reciprocable platens formed with complimentary sets of guillotine-type blades. An hydraulic ram is provided for operating the platens and the machine has an ejector mechanism for expelling shred material from between the blades.

3,826,167
SIGN FORMING APPARATUS, METHOD AND DIE FOR USE THEREIN

Pierre A. Pelet, Mill Valley; Bernard Bouyssounouse, Palo Alto, and Fritz Haas, Concord, all of Calif., assignors to PST Company, Sausalito, Calif.

Filed May 19, 1972, Ser. No. 255,243
Int. Cl. B26d 7/10
U.S. Cl. 83—171 25 Claims

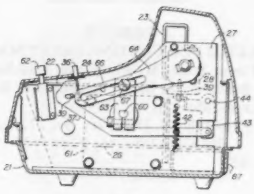


A die heating station is supported for movement between a ready position and a cutting position. In the cutting position a die is brought into contact with a sheet of thermoplastic material supported on a carrier having a suitable cutting pad against which the die can bear to cut a letter of a word. A die cooling station receives each die after the cutting operation and cools it to an operator-handleable temperature. A particular die structure is used which facilitates rapid heating and cooling of the die while retaining the necessary thermal properties for cutting thermoplastic sheet material. A procedure and guide is provided for accurately spacing adjacent letters of the word being cut.

3,826,168
POWER-OPERATED, MULTI-DIE PUNCH

Charles T. Groswith, III, Los Altos, and Danilo P. Buan, Pleasanton, both of Calif., assignors to Velo-Bind, Inc., Sunnyvale, Calif.

Filed June 14, 1973, Ser. No. 370,048
Int. Cl. B26d 5/20
U.S. Cl. 83—203 6 Claims

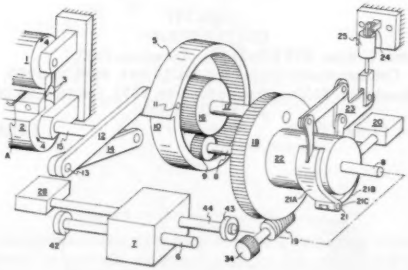


To punch paper and other sheet material a short distance inward of one margin with a plurality of small-diameter holes, a motor-driven punch machine is provided. Paper is deposited on a platen and squared with an adjustable side edge guide and is also squared with retractable pins a short distance forward of the back of the punch throat. The pins, when retracted, permit the paper to be inserted a greater distance in the punch so that the holes are a greater distance from said one margin than when the pins are projected. The motor, which turns through one cycle of the punch, rotates a crank which oscillates a lever attached to a splined main shaft. Each punch die is formed on the lower end of a generally cylindrical member formed with rack teeth meshing with the splines of the main shaft. When the lever oscillates, it oscillates the main shaft, depressing the punch dies across a throat in which the paper to be punched is inserted.

3,826,169
CUT-OFF KNIFE FOR CORRUGATORS

Gunter Schnell, Bochum, and Klaus Albert Hohage, Hattingen (Ruhr), both of Germany, assignors to Koppers Company, Inc., Pittsburgh, Pa.

Filed Aug. 3, 1973, Ser. No. 385,287
Int. Cl. B26d 1/40
U.S. Cl. 83—324 7 Claims



A cut-off knife for corrugators with at least one rotating knife bar for subdividing a web into sheets to which driving rotary motion is provided by a variable adjustable speed control gear and by a subsequently connected differential gear wherein the adjusting mechanisms of the speed control gear and the differential gear are not mechanically connected with one another. The control range of the speed control gear is subdivided into individual sections with each section producing a nominal-value signal; the differential gear is adjusted to

provide an actual-value signal for each adjustment. The difference between the nominal and the actual value signals form an output signal that controls the adjustment of the differential gear until the actual-value signal matches the nominal-value signal. The adjustment of the differential gear is preferably automatically controlled with the aid of the difference between the nominal-value signal and the actual-value signal so that the knife speed can be conformed to the speed of the web of material during operation.

3,826,170

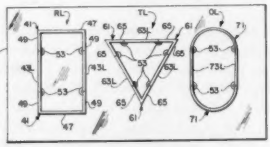
APPARATUS FOR CUTTING SHEET MATERIAL

Charles V. Jones; James W. Alvey, and Charles H. Sawborn, III, all of Brookhaven, Mich., assignors to Kellwood Company, St. Louis, Mo.

Filed July 18, 1972, Ser. No. 272,768

Int. Cl. B26f 1/46; B26d 7/26

U.S. Cl. 83—657 **4 Claims**



A cutting blade system for cutting sheet material into pieces of generally the same contour but of different sizes, especially useful in the manufacture of apparel for cutting cloth into pieces to be sewn together into garments. The system involves a set of primary cutting blade segments common to all sizes of a piece of given contour or pattern to be cut out of the sheet material and a set of auxiliary cutting blade segments additive to (or subtractive from) the primary segments to constitute cutting blade assemblies of different sizes in the stated contour or pattern. The segments are made of steel rule die stock, are releasably held together in assembly, and assemblies of segments in various patterns are utilized in a hydraulic press for die-cutting through one or more layers of material in the press. The press may have an electromagnetic head for magnetically gripping the assemblies for the cutting operation, and for quickly releasing them after the cutting operation, whereupon the assemblies may be disassembled and the primary segments reassembled with auxiliary segments in a different size.

3,826,171

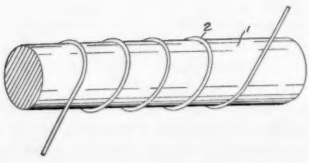
GUITAR STRING

James L. Kaar, 519 Ellis St., San Francisco, Calif.

Continuation-in-part of Ser. No. 29,841, April 20, 1970, abandoned. This application Sept. 30, 1971, Ser. No. 185,281

Int. Cl. G10d 3/00

U.S. Cl. 84—297 S **2 Claims**



A classic guitar string made of a synthetic plastic material, such as polyester fibers, with minimum possible stretch so as not to go out of tune, combined with a magnetic material, such as iron oxide, to permit the use of a magnetic pick-up for an amplifier, which picks up the magnetic vibrations only. In one form fine resilient iron wire is wound in close coil around Dacron fibres so that all the tension remains at all times on the fibres of the string and none of the tension on the fibres is taken up by the coil.

3,826,172

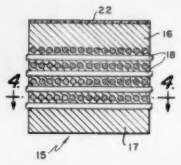
METAL, MATRIX-FIBER COMPOSITE ARMOR

Thomas J. Dawson, Falls Church, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed July 28, 1969, Ser. No. 846,314

Int. Cl. F41h 5/04

U.S. Cl. 89—36 A **2 Claims**



A high strength lightweight armor material consisting of metal composites strengthened by high density wire, fiber, or whisker elements, and which is particularly effective against more sophisticated weapons such as shaped charges and tungsten cored projectiles.

3,826,173

METHOD AND APPARATUS FOR CUTTING WORM WHEELS

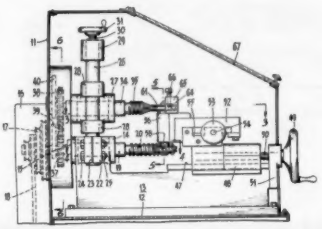
Langford Horace Waite, 3213 Napean Hwy., Sorrento, Victoria, Australia

Filed Aug. 16, 1972, Ser. No. 280,951

Claims priority, application Australia, Sept. 3, 1971, 6157/71

Int. Cl. B23f 11/00

U.S. Cl. 90—4 **5 Claims**



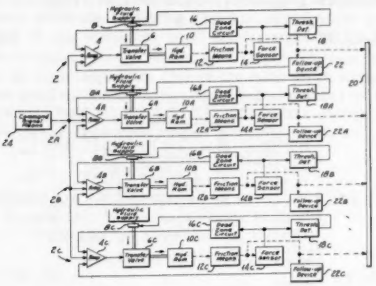
Worm wheels are formed from cylindrical blanks mounted on opposite sides of a cutter in the shape of a worm with a tapered end fluted to provide cutting edges. The cylindrical blanks are keyed or splined on parallel shafts fixed to corresponding worm wheels engaging on opposite sides of a worm. The cutter and the worm are driven concurrently and the cutter is advanced between the cylindrical blanks to cut teeth in the peripheral surfaces thereof.

3,826,174

QUADRUPLE REDUNDANT CLOSED LOOP ELECTRO-HYDRAULIC SERVO SYSTEM

Walter A. Platt, Fair Lawn, N.J., and Gibson Reynolds, Tuxedo Park, N.Y., assignors to The Bendix Corporation, Teterboro, N.J.

Continuation-in-part of Ser. No. 120,522, March 3, 1971, abandoned. This application Nov. 15, 1972, Ser. No. 306,768
Int. Cl. F15b *9/03, 9/09*
U.S. Cl. 91—363 A 3 Claims



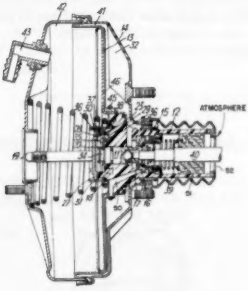
A quadruple redundant closed loop electro-hydraulic servo system which is operable for two failures and passive for a third failure includes force summing apparatus and means for alleviating sensitivity of said apparatus to channel-to-channel tolerances.

3,826,175

BRAKE BOOSTER

Rudolf Thiel, and Armin Lauterwasser, both of Frankfurt am/Main, Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Nov. 3, 1972, Ser. No. 303,465
Claims priority, application Germany, Nov. 5, 1971, 2155169
Int. Cl. F15b *9/10*
U.S. Cl. 91—369 B 19 Claims



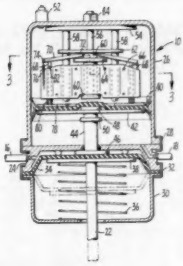
This relates to a pneumatic brake booster and more particularly to the reaction mechanism which controls the application of the mechanical force (brake pedal force) and pneumatic servo-force to the output push rod which in turn operates on the brake pressure medium. The reaction mechanism includes specially designed reaction segments, a reaction ring and a supporting disc all of which are supported in such a way on an end of the control piston adjacent the output push rod that assembly is easy and force ratios can be easily changed.

3,826,176

VEHICLE BRAKE

Ernest C. Ike, Santa Rosa, Calif., assignor to Wiz Corporation, Concord, Calif.

Continuation of Ser. No. 73,711, Sept. 21, 1970, abandoned. This application June 28, 1972, Ser. No. 267,311
Int. Cl. F15b *15/26*
U.S. Cl. 92—25 5 Claims



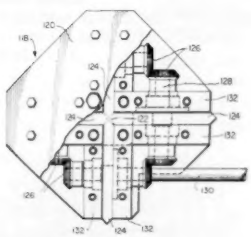
A captive air brake for vehicles adapted to be used as a parking brake for trucks having a mechanical lock for holding the brake in a brake applied position after the energy for application of the brake has been supplied by a captive body of fluid under pressure.

3,826,177

APPARATUS FOR MAKING FILTER MEANS

Richard M. Berger, Richmond, and Elwin W. Brooks, Mechanicsville, both of Va., assignors to American Filtrona Corporation, Richmond, Va.

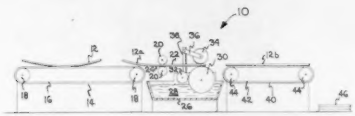
Division of Ser. No. 290,700, Sept. 20, 1972, Pat. No. 3,774,508, which is a division of Ser. No. 45,109, June 10, 1970, Pat. No. 3,637,447, which is a continuation-in-part of Ser. Nos. 727,477, May 8, 1968, Pat. No. 3,533,416, and Ser. No. 820,355, April 30, 1969, Pat. No. 3,599,646, which is a continuation-in-part of Ser. No. 727,477,. This application Apr. 11, 1973, Ser. No. 350,019
Int. Cl. A24c *5/50*
U.S. Cl. 93—1 C 4 Claims



An apparatus for making filter means of a type which is constructed to provide elongated, high surface area, cavities defined on opposite sides of a relatively thin wall formed of filtering material with only the ends of the filter means contacting an overwrapped outertube thereby presenting maximum available surface area of the material from which the products are formed to the smoke for filtration is disclosed. A tow of a suitable filtering material is passed through an air nozzle containing a mandrel centered therein, the two thereby achieving a uniformly random, but tubular, configuration and then through a steam curing station followed by an air curing station. The formed rod is then again steam cured and passes to a

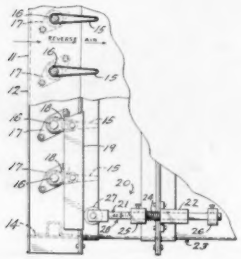
crimping device which imparts a particular configuration thereto. The crimped rod is then again air cured, wrapped, and cut. In another embodiment, an additional material may be added by means either of a printing applicator device or a pulsating nozzle device.

3,826,178
REMOVAL OF WARP FROM CORRUGATED PAPERBOARD
Larry D. Taylor, Circleville, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio
Division of Ser. No. 244,450, April 17, 1972, abandoned. This application June 7, 1973, Ser. No. 367,698
Int. Cl. B31f 7/00
U.S. Cl. 93—1 R **1 Claim**



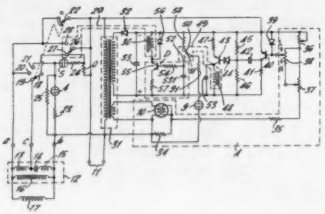
A new method and apparatus is provided by this invention for removing the warp from warped sheets of corrugated paperboard in corrugated box plants. In accordance with this invention, water is applied to the convex side of a warped sheet of currugated paperboard as the sheet leaves a corrugator. As this wetted convex side of the paperboard sheet dries, the fibers shrink to a greater extent than they had originally thereby pulling the sheet to a non-warped, flat condition. Thus, by removing the warp from the warped corrugated paperboard, this board can be utilized as acceptable quality board rather than being scrapped as was previously necessary.

3,826,179
DIFFERENTIAL PRESSURE RESPONSIVE DAMPER
Raymond L. Alley, Toledo, Ohio, assignor to The American Warming & Ventilating, Inc., Toledo, Ohio
Filed Oct. 20, 1972, Ser. No. 299,625
Int. Cl. F24f 13/02
U.S. Cl. 98—40 V M **4 Claims**



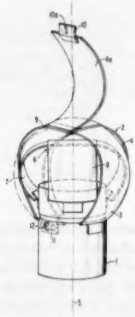
A damper comprising a plurality of parallel blades that are hinged on parallel axes and normally are opened in one direction by positive air pressure on a first side of the blades, for example, by the flow of air from an exhaust fan or the like. The damper blades are connected by linkage so that they swing together. The damper has a biased stop against which the blades close when the pressure differential between the two sides of the blades is negligible. When the pressure on the second side of the blade creates a predetermined positive pressure differential on the second side, the bias of the stop is overcome and the blades are opened in the opposite direction. The bias on the stop is variable in order to determine the pressure differential necessary to open the blades in the opposite direction.

3,826,180
VENTILATION FAN SYSTEM WITH SMOKE DETECTOR SPEED CONTROL
Toshikazu Hayashi, 1-25, Minami 1-chome, Nara, Japan
Filed Mar. 15, 1973, Ser. No. 341,781
Claims priority, application Japan, July 28, 1972, 47-76178; July 28, 1972, 47-76179; July 28, 1972, 47-76180; July 28, 1972, 47-76181; Aug. 2, 1972, 47-77912
Int. Cl. A62c 3/14
U.S. Cl. 98—43 **9 Claims**



This invention relates to a ventilator wherein an electronic circuit is actuated when a detecting element detects the existence of any smoke or gas while a fan is in a manually selected slow rotating node of operation or in a stand-by halting position, and then the fan is automatically put into full rotation in order to expel smoke or such gas as carbon monoxide, and also for a specified period after completion of this expelling operation the fan is kept rotating during the above operation through the function of a delay-off circuit, with a shutter of a ventilating window being kept open by means of a switch network.

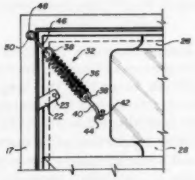
3,826,181
ATTACHMENT FOR VENTILATING SHAFTS OR THE LIKE
Gerhard Schrade, Kriegerstrasse 14, Stuttgart 1, Germany
Filed June 8, 1973, Ser. No. 368,302
Claims priority, application Finland, June 9, 1972, 1654/72
Int. Cl. F23l 17/02
U.S. Cl. 98—66 **22 Claims**



An apparatus for covering an open end of a ventilating shaft or the like which includes a collar having a through opening which is attachable to the open end, usually top end, of a ven-

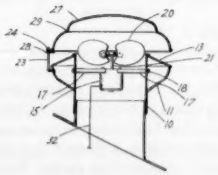
tilating shaft. Two concentrically arranged hood sections, each consisting of two intersecting flat strips of material attached at opposite sides of the collar are provided for covering the free end opening of the collar. The inner hood section is positioned with interspaces between the flat strips which are covered in radial outward directions with respect to an axis of symmetry of the collar by the strips of the outer hood section with a consequent complete closure in a radial direction with respect to said axis from the outside while still retaining large gaps between the concentrically spaced hood sections for accommodating flow through of ventilating gases from the ventilating shaft with a minimum danger of clogging of the hood apparatus, while also obtaining optimum aerodynamic performance of the ventilating hood insofar as maintaining a vacuum for assisting in the ventilation in response to wind flow against the hood apparatus. One of the outer strips forming the outer hood section includes a movable flap member for accommodating opening up of the outer hood section to facilitate cleaning and repair of both of the hood sections.

3,826,182
WINDOW AIR FILTER WITH LOCKING ASSEMBLY
Joseph Navara, 2105 Walton St., Chicago, Ill. 60610
Filed Mar. 26, 1973, Ser. No. 345,109
Int. Cl. E06b *7/08, 3/32*
U.S. Cl. 98—98 **2 Claims**



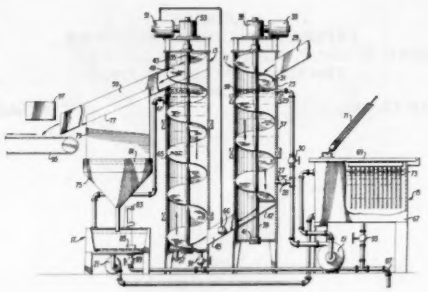
A window air filter unit for mounting between a top frame part and a top sash of an upper window, with an improved unit for locking the air filter unit in such position. The improved locking unit is an adjustable length lock having a connector, link means at the opposite ends of the connector, and hook elements at the ends of the link means to releasably engage catches, one catch fixed to an adjacent window side frame part just below the junction with the top frame part; and the other catch fixed on a movable sleeve of the filter unit. The catches are on the room side of the window and air filter unit so the air filter unit may be easily mounted and demounted by a person inside the room.

3,826,183
MOTOR-POWERED SELF-OPENING AND CLOSING VENTILATORS
Kenneth M. Rudine, 1307 Ashland, Houston, Tex. 77008
Filed Jan. 2, 1973, Ser. No. 320,102
Int. Cl. F04d *25/14*
U.S. Cl. 98—116 **7 Claims**



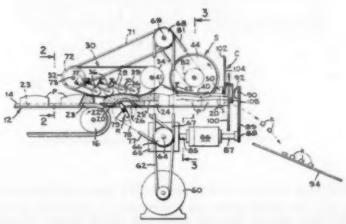
Motor-powered ventilators having a domed top or lid which is opened by air pressure therebeneath when the ventilator is operating and which closes when the ventilator is not operating. The ventilators are of completely symmetrical form.

3,826,184
CONVEYOR-TYPE COOKING DEVICE
Thomas E. Shotton, Jr., 211 Fayette St., Suffolk, Va. 23434
Filed Sept. 26, 1972, Ser. No. 292,284
Int. Cl. A47j *37/12*
U.S. Cl. 99—404 **11 Claims**



Described herein is a conveyor-type cooking device comprising two vertically-disposed auger conveyor systems, an oil-flow/oil-heating system, and an automatic conveyor control system. Each of the auger conveyor systems includes a perforate auger situated inside a cylinder housing. One of the perforate auger systems conveys downwardly and the other upwardly. The cylinder housings are serially connected at the bottoms thereof. The oil-flow/oil-heating system circulates heated oil through the serially connected cylinder housings in the same directions as the augers convey. The heating system maintains the oil at a uniformly high temperature throughout the cylinder housings. The automatic control system monitors food articles being conveyed through the cylinder housings and controls the speed at which the upwardly conveying auger rotates.

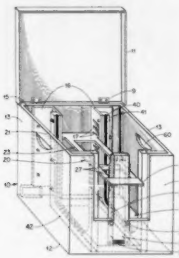
3,826,185
PINEAPPLE RECORING, SEGMENTING AND CHUNKING
Leslie Vadas, Los Gatos, Calif., assignor to Castle & Cooke, Inc., Honolulu, Hawaii
Filed Mar. 9, 1972, Ser. No. 233,094
Int. Cl. A47j *25/00;* **B26d** *4/06*
U.S. Cl. 99—548 **3 Claims**



Contour peeled and precored pineapple halves are continuously advanced, cut face down, along a planar support having a rib which guides the halves by their precore recesses. The halves are then passed over a rotary loop knife projecting up through the support which removes the remainder of the core material and the recored halves are then guided by a larger rib fitted into the recore recesses. The guided halves then pass beneath radial segmenting knives which are backed up by

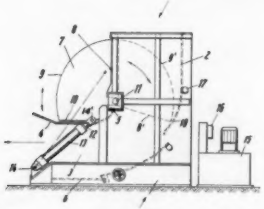
downstream radial guide plates and the segmented halves are projected past the end of the support into the path of a rotary chunking knife. The rotary chunking knife has an offset gauge plate for receiving the fruit ends and a spiral edged slicing knife parallel to the gauge plate adjacent the end of the support, with the gauge plate terminating circumferentially while the knife is still slicing and with the knife terminating circumferentially at the off-set pineapple receiving portion of the gauge plate.

3,826,186
PAPER COMPACTOR AND BUNDLER
John L. Mechler, P. O. Box 341, Norris, Ind. 37828
Filed May 14, 1973, Ser. No. 359,867
Int. Cl. B65b *13/04*
U.S. Cl. 100—25 **7 Claims**



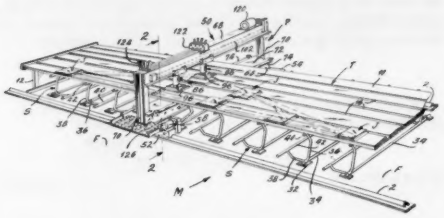
A device is described which allows efficient and convenient compaction of papers, magazines and the like. The device consists of a rectangular container having an adjustable compression lever therein for compacting the papers into bundles, means for retaining the compression lever in the compressed state, means for encircling the bundle with a strand or wire and means for securing the ends of said strand or wire.

3,826,187
GARBAGE PRESS
Kurt Smolka, Wittenauerstrasse 82-86, Berlin, Germany
Filed Aug. 22, 1972, Ser. No. 282,803
Claims priority, application Germany, Aug. 25, 1971, 2143334
Int. Cl. B30b *15/28*
U.S. Cl. 100—53 **5 Claims**



A garbage press has an opening filled from above and a chamber for the filling located under the opening. A pressing shield is movable in the chamber; it is swingable about a horizontal axis by a hydraulic piston-cylinder aggregate. The shield consists of a pressure plate, a cover plate coaxial with the axis of rotation and a rear wall. The shield pushes out the garbage directly through an outlet channel connected substantially horizontally to the chamber. The invention is particularly characterized in that the hydraulic piston-cylinder aggregate is directly attached to the rear wall of the pressure shield at a distance from its axis of rotation in such manner that in the withdrawn position the longitudinal axis of the moved in piston-cylinder aggregate extends upwardly in an inclined direction at a distance from the axis of rotation of the pressing shield which is smaller than its distance from the point of attachment of the aggregate.

3,826,188
TRUSS FABRICATING MACHINE
George F. Eberle, 427 Baker Ave., Webster Groves, Mo. 63119
Filed Oct. 24, 1972, Ser. No. 300,198
Int. Cl. B30b *7/00*
U.S. Cl. 100—100 **15 Claims**

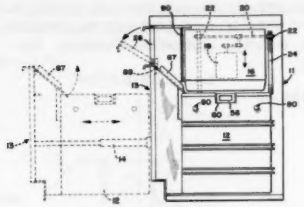


A truss fabricating machine for forcing truss connector plates into abutting pieces of lumber includes a platform having parallel channels extending the length thereof. Jigging pads rest on the platform and are secured thereto by bolts which thread into retaining elements in the channels. The platform is supported by supporting units, each of which has a pair of leading legs and a pair of trailing legs connected to the leading legs. The legs are movable between upright supporting positions and depressed non-supporting positions. When the leading legs are in their supporting positions, the trailing legs are in the depressed positions, and vice-versa. A gantry press moves along the platform and includes a pair of wheeled carriages, a lower beam extended beneath the platform, an upper beam extended over the platform, and hydraulic press units carried by and movable along the upper beam. The lower beam is secured firmly to one carriage and rests on a bridge bearing on the other carriage so that the wheels of the carriages will follow irregular track surfaces. As the gantry press moves along the platform, it strikes the leading legs of the support units, causing those legs to move to their depressed non-supporting positions and bringing the trailing legs up to their upright supporting positions. The upper beam is a box beam, the interior of which serves as a reservoir for the hydraulic system. Each carriage wheel is powered so the gantry press does not tend to skew on the track.

3,826,189
TRASH COMPACTOR AND BAG SYSTEM
Ernst Grunewald, Troy, Ohio, assignor to The Hobart Manufacturing Company, Troy, Ohio
Filed July 28, 1972, Ser. No. 276,241
Int. Cl. B30b *15/00*
U.S. Cl. 100—229 A **3 Claims**

A trash compactor includes a container and a ram for compacting waste materials deposited therein, and a reusable liner positioned within the container receives the waste material, and facilitates removal of the waste material after compaction thereof. The liner has interfitting sections each with upstanding sidewalls and a bottom wall with one sidewall of each of the sections being shortened to permit their ready assembly and disassembly. A tubular bag of seamless plastic sheet material having one sealed end is placed in the liner, and a cuff portion folds over the upper end of the liner and the container. Holes in the cuff portion engage buttons on the exterior of the

container. The buttons have enlarged heads formed as sections of a sphere. When a bag of compacted trash is removed,



the material drops to the sealed end of the bag and the cuff portion can close the open end of the bag. The holes may then provide a means for engaging a tie to close the bag.

3,826,190

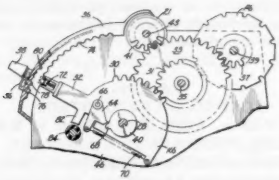
PRINT WHEEL SETTING AND KEYLEVER RESET MEANS IN PRINTING MACHINES

James T. Zofchak, Wickliffe, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio

Continuation-in-part of Ser. No. 235,896, March 20, 1972, abandoned. This application July 18, 1973, Ser. No. 380,493

Int. Cl. B41j *7/02*

U.S. Cl. 101—45 **5 Claims**



A printing machine for imprinting forms with fixed data from embossed printing plates and variable data from manually settable print wheels by moving a platen from a start position across the printing elements to an actuated position to perform a printing operation and back to the start position to complete a printing cycle. The print wheels are selectively positionable by keyset levers movable from a blank position to a selected position for rotating each of the print wheels to a desired peripheral setting. Adjustable stop means is associated with each of the keyset levers and is manually settable from a home position to a selective preset keylever blocking position at which it is desired to maintain the corresponding keylever for subsequent repetitive printing operations. Reset means is also provided for simultaneously restoring all of the keyset levers to the blank position, except those which have been blocked against movement by the stop means, during return movement of the platen from the actuated to the start positions.

3,826,191

PRINTING DEVICE

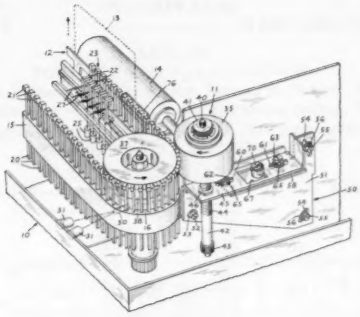
Bertram H. Pittis, Madison, and Albert Cipas, Colonia, both of N.J., assignors to Dow Jones & Company, Inc., New York, N.Y.

Filed Apr. 19, 1973, Ser. No. 352,649

Int. Cl. B41j *5/08*

U.S. Cl. 101—103 **8 Claims**

A belt type printer in which the conventional inking ribbon is replaced by a roller which is uniquely supported and arranged to insure the application of the correct amount of ink to the type characters at all times. A support member is carried by one of the pulleys of the printer to maintain the type characters in their correct positions relative to the roller, and the roller's location relative to the type characters is adjusta-



ble in three different modes. The printer also includes a novel guide member which is effective to hold the paper against the platen as the type characters leave the inking roller and approach the printing position and to prevent any misaligned characters from inadvertently touching the paper or the exposed surface of the platen during their approach.

3,826,192

WASTE INK DISPOSAL MEANS FOR SPRAY PRINTING DEVICES

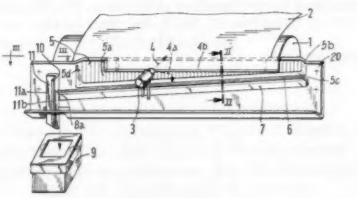
Erich Kattner, and Klaus Bork, both of Munich, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Apr. 17, 1972, Ser. No. 244,492

Claims priority, application Germany, Apr. 21, 1971, 2119427

Int. Cl. B41f *31/00;* **G01d** *15/18*

U.S. Cl. 101—335 **4 Claims**



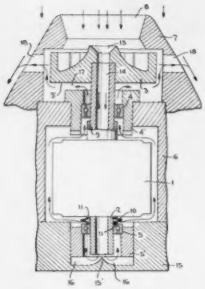
An inexpensive and efficient device which guarantees a satisfactory draining of waste ink accumulating on a rejection shutter in a spray printing device comprises a discharge channel member positioned below the rejection shutter and inclined from the horizontal by approximately 3°. The discharge channel member is formed of an elongated strip of sheet material bent at several points parallel to its length and joined to the rejection shutter to form a groove along their intersecting portions which groove will exert a capillary influence on the waste ink and thereby cause it to drain to a waste ink receptacle.

3,826,193

METHOD FOR SUPPORTING A ROTATING BODY IN GENERATORS FOR MISSILES AND A SUPPORTING ARRANGEMENT FOR SUPPORTING SUCH BODIES

Tore Rognmo, and Kvrre Sjotun, both of Kongsberg, Norway, assignors to A/S Kongsberg Vapenfabrik Kirkegardsveien, Kongsberg, Norway

Filed Feb. 16, 1973, Ser. No. 332,818
Int. Cl. F42c *11/00*
U.S. Cl. 102—70.2 G 5 Claims



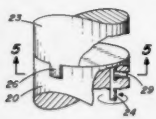
Method and means for supporting a rotating body in generators in missiles wherein the rotating body includes a generator rotor, a shaft therefor, bearing means rotatably supporting the shaft, and a turbine wheel mounted on the front end of the shaft. The turbine wheel is driven by ram air meeting the wheel in the axial direction and subjecting the rotating body to an axial load. A bore is provided through the shaft and a pressure chamber is defined rearwardly of the shaft to deflect the ram air approximately 180° passing the same through the bearing means to lubricate and cool the bearings. Any solid particles in the ram air are trapped in the pressure chamber. A radial gap is provided rearwardly of the turbine wheel and forwardly of the rotor to pass the ram air to free air after it has passed through the bearings.

3,826,194

SAFETY MECHANISM FOR MILITARY FUZES

Azriel J. Rabinowitz, and John J. Cama, both of Rochester, N.Y., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 27, 1970, Ser. No. 10,110
Int. Cl. F42c *15/22*
U.S. Cl. 102—79 3 Claims



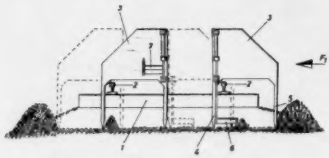
A safety mechanism for military fuzes. The mechansim includes a tab on the fuze rotating member adapted to extend over a portion of the rear fitting. A slider and an associated spring in the rear fitting normally prevents rotation of the arming shaft of the fuze. Movement of the slider to free the arming shaft is controlled by the tab. At conventional settings of the fuze, slider movement is not blocked by the tab and the slider is free to move into an annular groove in the fuze non-rotating member under the influence of the centrifugal force generated by projectile spin.

3,826,195

DEVICE FOR REMOVING BALLAST FROM RAILWAY ROADBEDS

Herbert Bucksch, Ruskau, Germany, assignor to Rheiner Maschinenfabrik Windhoff Akt.-Ges., Rheine, Germany

Filed Sept. 17, 1973, Ser. No. 397,849
Claims priority, application Germany, Oct. 24, 1972, 2252056
Int. Cl. E01b *27/04*
U.S. Cl. 104—2 5 Claims



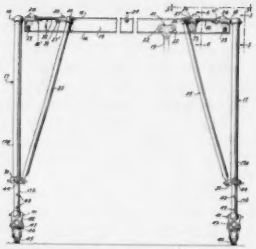
A pair of removal implements are mountable on a track supported work vehicle for movements between raised and lowered positions as well as movements longitudinally of ties disposed to support the tracks. Downwardly depending, blade-like implement elements on the removal implements are disposed to work simultaneously on the outside and inside of each track for removing ballast to the outside of the tracks. Supplementary implements including lateral extensions are rotatably mounted on each of the removal implements for movements from an inoperative position, during initial ballast removal operations, to an operative position during final ballast removing operations whereby ballast under the track is removed by the lateral extensions.

3,826,196

LOAD-HANDLING GANTRIES

Bernard E. Wallace, Exton, Pa., assignor to B.E. Wallace Products Corp., Malvern, Pa.

Continuation of Ser. No. 864,858, Oct. 8, 1969. This application May 11, 1972, Ser. No. 252,222
Int. Cl. E01b *23/00*
U.S. Cl. 104—126 13 Claims

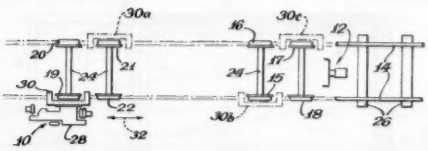


A load-handling gantry, having a beam, from which loads may be suspended, is supported by divergent legs, a pair of which are disposed on opposite sides of the beam, each leg having its upper end pivoted to the beam on an axis slightly offset laterally from the center line of the beam, so that the gantry structure is laterally somewhat flexible but is stabilized by the load, and a stabilizing spring is also employed; the legs being adjustably cross-tied at the bottom. In the preferred form the legs are each longitudinally adjustable, and are pivotally connected to an adjustable cross-tie assembly serving also as a mobile mount, so that the height and the spread of the gantry are independently variable, while at the same time stability and mobility are achieved. Advantages as to space, weight, cost and versatility are among the objects.

3,826,197
TRACKED VEHICLE SYSTEM
Cesare Peveraro, Milan, Italy, assignor to Societa' Per La Strada Guidata S.r.L., Milano, Italy
Filed Mar. 19, 1973, Ser. No. 342,358
Claims priority, application Italy, Mar. 21, 1972, 9406/72
Int. Cl. E01b 25/12
U.S. Cl. 104—130 4 Claims

A crossover network interposed between two track portions of a tracked vehicle system each having to tracks, comprises a first resilient wheel-guiding tongue aligned with one of the tracks of one track portion, and a second resilient wheel-guiding tongue aligned with the other of the tracks of the other track portion. When the tongues are deflected by a lateral force one of the resilient tongues is aligned with a rigid wheel-guiding tongue, and the other resilient tongue is parallel to the rigid tongue whereby a wheeled vehicle is switched from one track to the other track.

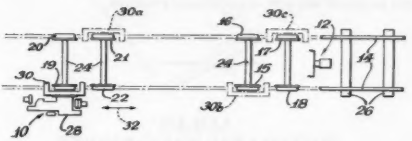
3,826,198
PORTABLE RAILWAY CAR MOVER
T. Dale Stewart, New Kensington; Thomas D. Stewart, Murrysville, both of Pa., and Charles F. Hautau, Oxford, Ohio, assignors to Shippers Automation, Inc., New Kensington, Pa.
Filed Feb. 14, 1972, Ser. No. 225,907
Int. Cl. B61b 13/12, 15/00; B61j 3/12
U.S. Cl. 105—90 A 11 Claims



Power attachment made to the lower portion of a rail car wheel, at the outer side thereof, to render a railway car self-propellable bidirectionally. The structure includes a roller-carrying C-clamp which, from a side entry position relative to the car to be moved, draws in with a power clamping action against the tread of the wheel at that side so as to interpose first rollers between the jaws of the clamp and the wheel, and other rollers between the clamp and the rail beneath the car wheel. The structure also includes a power unit for bidirectionally driving the first rollers, for collapsing the C-clamp under power to partially support the wheel on the rail, and for bidirectionally driving a set of extendible ground transport wheels which are provided for the structure and which, when extended from a retracted position, render the attachment self-propellable on the ground independently of the car and the rail.

What are primarily involved here are the feature of the power unit's set of ground wheels being in a triangular arrangement for platform stability, the feature of one such ground wheel being a dirigible wheel which is turned in one direction to cooperate as part of the ground wheel set and in another direction in a cooperative, support providing relationship with said other rollers, and the feature of means for individually controlling wheel elevation of the set of ground wheels.

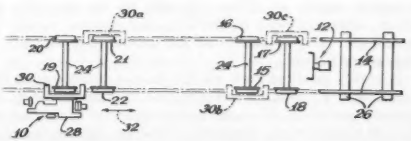
3,826,199
PORTABLE RAILWAY CAR MOVER
T. Dale Stewart, New Kensington; Thomas D. Stewart, Murrysville, both of Pa., and Charles F. Hautau, Oxford, Ohio, assignors to Shippers Automation, Inc., New Kensington, Pa.
Filed Feb. 14, 1972, Ser. No. 225,911
Int. Cl. B61b 13/12, 15/00; B61j 3/12
U.S. Cl. 105—90 A 6 Claims



Power attachment made to the lower portion of a rail car wheel, at the outer side thereof, to render a railway car self-propellable bidirectionally. The structure includes a roller-carrying C-clamp which, from a side entry position relative to the car to be moved, draws in with a power clamping action against the tread of the wheel at that side so as to interpose first rollers between the jaws of the clamp and the wheel, and other rollers between the clamp and the rail beneath the car wheel. The structure also includes a power unit for bidirectionally driving the first rollers, for collapsing the C-clamp under power to partially support the wheel on the rail, and for bidirectionally driving a set of extendible ground transport wheels which are provided for the structure and which, when extended from a retracted position, render the attachment self-propellable on the ground independently of the car and the rail.

Primarily emphasized here are the features of a failsafe brake on one of the first rollers, and the feature of power delivery means common to one bidirectionally driven first roller and the brake, effective selectively to inactivate the brake and activate one driven first roller, and selectively to activate the brake and inactivate the one roller.

3,826,200
PORTABLE RAILWAY CAR MOVER
T. Dale Stewart, New Kensington; Thomas D. Stewart, Murrysville, both of Pa., and Charles F. Hautau, Oxford, Ohio, assignors to Shippers Automation, Inc., New Kensington, Pa.
Filed Feb. 14, 1972, Ser. No. 225,912
Int. Cl. B61b 13/12, 15/00; B61j 3/12
U.S. Cl. 105—90 A 5 Claims



Power attachment made to the lower portion of a rail car wheel, at the outer side thereof, to render a railway car self-

propellable bidirectionally. The structure includes a roller-carrying C-clamp which, from a side entry position relative to the car to be moved, draws in with a power clamping action against the tread of the wheel at that side so as to interpose first rollers between the jaws of the clamp and the wheel, and other rollers between the clamp and the rail beneath the car wheel. The structure also includes a power unit for bidirectionally driving the first rollers, for collapsing the C-clamp under power to partially support the wheel on the rail, and for bidirectionally driving a set of extendible ground transport wheels which are provided for the structure and which, when extended from a retracted position, render the attachment self-propellable on the ground independently of the car and the rail.

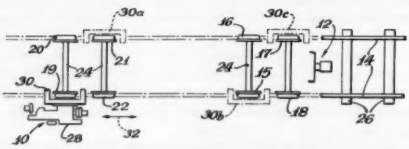
Primarily involved here are the feature of a generally upright stabilizer arm pivotally connected to the structure and having an upstanding, roller carrying portion of the arm pivotable by the arm into a stabilized, wheel-gripping contact at about axle height, and the feature of bidirectional power means selectively to pivot the arm into wheel-gripping contact and to return the arm to unpivoted position.

3,826,201

PORTABLE RAILWAY CAR MOVER

T. Dale Stewart, New Kensington; Thomas D. Stewart, Murrysville, both of Pa., and Charles F. Hautau, Oxford, Ohio, assignors to Shippers Automation, Inc., New Kensington, Pa.

Filed Feb. 14, 1972, Ser. No. 225,918
Int. Cl. B61b *13/12, 15/00;* **B61j** *3/12*
U.S. Cl. 105—90 A **11 Claims**



Power attachment made to the lower portion of a rail car wheel, at the outer side thereof, to render a railway car self-propellable bidirectionally. The structure includes a roller-carrying C-clamp which, from a side entry position relative to the car to be moved, draws in with a power clamping action against the tread of the wheel at that side so as to interpose first rollers between the jaws of the clamp and the wheel, and other rollers between the clamp and the rail beneath the car wheel. The structure also includes a power unit for bidirectionally driving the first rollers, for collapsing the C-clamp under power to partially support the wheel on the rail, and for bidirectionally driving a set of extendible ground transport wheels which are provided for the structure and which, when extended from a retracted position, render the attachment self-propellable on the ground independently of the car and the rail.

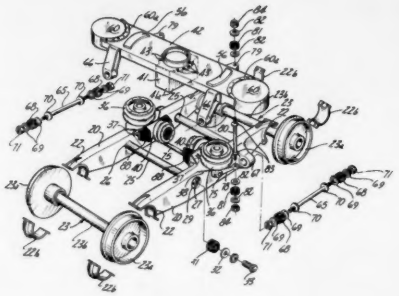
Primarily involved here are the feature of one of the first rollers and a stabilizer roller spaced thereabove being oppositely placed on the clamp to the other one of the first rollers, all relative to the wheel therebetween, and the feature of the mentioned three rollers operatively establishing fixed engagement with the wheel periphery upon closure of the clamp, in three point rolling contact in a triangular arrangement in the plane of the wheel.

3,826,202

PNEUMATICALLY SPRUNG RAILWAY CAR TRUCK

Harry M. Russell-French, Philadelphia, Pa., assignor to The Budd Company, Detroit, Mich.

Filed Mar. 12, 1973, Ser. No. 340,412
Int. Cl. B61f *3/08, 5/10, 5/12*
U.S. Cl. 105—182 R **8 Claims**



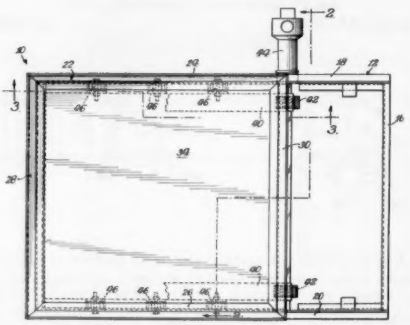
A railway truck is self-contained to receive car bodies of different sizes and includes a bolster, vertical and horizontal air springs. Transoms are provided to permit longitudinal movement of the side frames with respect to each other. A source of air is connected to provide air pressure for both the vertical and horizontal air springs.

3,826,203

HOPPER GATE OUTLET ASSEMBLY

Byron W. Martin, Kankakee, and William Gibson, South Holland, both of Ill., assignors to Miner Enterprises, Inc., Chicago, Ill.

Filed Nov. 6, 1972, Ser. No. 303,795
Int. Cl. B61d *7/02, 7/20, 7/26*
U.S. Cl. 105—282 P **5 Claims**

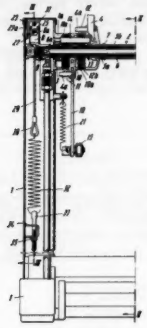


A horizontally movable carriage effects movement of a horizontal gate between open and closed positions relative to the discharge opening of a hopper outlet assembly. Between the carriage and the gate are cooperating force transmitting and reaction means. Upon movement of the carriage in one direction, the gate is first moved horizontally beneath the discharge opening and then raised to seal the opening. Upon movement of the carriage in the other direction, the gate is first lowered and then moved horizontally away from the position beneath the discharge opening.

3,826,204
DRAWING TABLE

Franz Kuhlmann; Arnold Gundlach, and Horst Seiffert, all of Wilhelmshaven, Germany, assignors to Franz Kuhlmann KG, Wilhelmshaven, Germany

Filed Oct. 11, 1972, Ser. No. 296,586
Int. Cl. A04f 5/12
U.S. Cl. 108—2 10 Claims

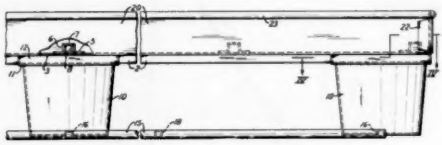


A drawing table having a stand and a board linked to the stand in such a manner as to allow the board to be adjusted in position whereby the weight of the board creates a second moment about the axis opposing the first moment. A compensating means varies the second moment to compensate for variations in the first moment due to changes in the position of the board so that the board is balanced in any position.

3,826,205
METAL PALLET

Maurice A. Weiss, Steubenville, Ohio, assignor to Follansbee Steel Corporation, Follansbee, W. Va.

Filed Oct. 30, 1972, Ser. No. 302,102
Int. Cl. B65d 19/18
U.S. Cl. 108—51 4 Claims

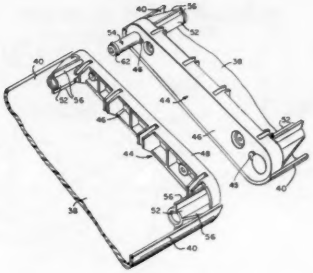


A number of spaced parallel sheet metal channels are arranged in two rows, one on top of the other. The upper row is welded to the lower row to form a platform. The platform is supported by sheet metal feet, each of which has a cup-like body disposed between two adjacent channels in the lower row and extending downwardly from them. Two opposite upstanding flanges connected with the top of the body straddle the two channels and are welded to the adjoining upstanding side walls of the two channels. The channels forming the boundary of the platform have upwardly extending outer edges that form side walls for the platform, so a tray is formed.

3,826,206
MODULAR FURNITURE OR LIKE ARTICLES AND MODULAR UNITS THEREFOR

Kay Ruggles, Salt Lake City, Utah, assignor to Directional Industries Incorporated, New York, N.Y.

Filed Oct. 12, 1972, Ser. No. 297,056
Int. Cl. F16b 12/26
U.S. Cl. 108—64 10 Claims

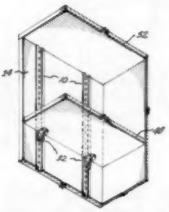


The invention provides modular structural units of various sizes and shapes for assembling into knockdown structures. Each unit is hollow and has at least one end edge corresponding in size and shape with an end edge of each of the others. The units are assembled corresponding end to corresponding end. The corresponding ends of the units are closed by a wall in which are set inwardly extending sockets for receiving the ends of rigid coupling members. Each socket and each end of each coupling member is provided with cooperating means for forming a snap engagement between them and for limiting the inward movement of the coupling member into the socket past the snap engagement.

3,826,207
COLLAPSIBLE, ADJUSTABLE SHELVING

William B. Sutherlan, Gig Harbor, Wash., assignor to Pickering Industries, Inc., Tacoma, Wash.

Filed Aug. 21, 1972, Ser. No. 279,283
Int. Cl. A47b 57/08
U.S. Cl. 108—108 10 Claims



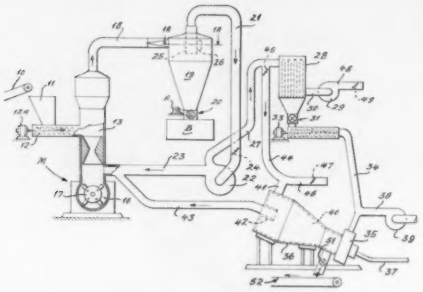
A pair of box shaped shelf support strips embedded in the face of upright support members resiliently urges serrated sides of the support strips against the support members. The outermost sides of the strips are slotted and the back sides have spaced holes to accept a projecting insert from a support bracket. The bracket is rotated after insertion and lugs on the projection hold to the forward sides of the strip. A pin extends upward from each bracket to enter a recess in shelving to hold the support members and shelving in relation to each other.

3,826,208

APPARATUS AND SYSTEM FOR DISPOSING OF COMBUSTIBLE AND WASTE MATERIAL

Robert M. Williams, Ladue, Mo., assignor to Williams Patent Crusher and Pulverizer Company, St. Louis, Mo.

Filed Aug. 6, 1973, Ser. No. 385,984
Int. Cl. F23g *5/00*
U.S. Cl. 110—15 **10 Claims**



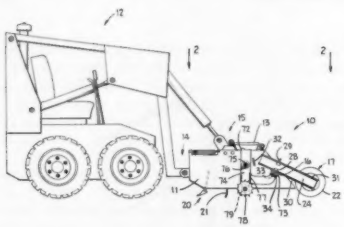
The disposal of hydroscopic combustible material, such as scrap wood and bark, needs to be carried on at a temperature of about 600° F. or somewhat lower to prevent flashing off certain volatiles which at or above that temperature level cause the formation of a noxious blue smoke. The system and apparatus is caused to move a large volume of air through a furnace to provide the needed heat for drying the material to a state where it can be consumed by serving as a fuel. The air volume so moved is dust laden, and the apparatus concentrates the dust and particulate material for burning, and effectively mixes the combustible products with cleansed air to produce a source of heat at a controlled temperature level.

3,826,209

LANDSCAPING APPARATUS WITH SEED DISPENSER

Carl D. Jackson, Fortville, Ind., assignor to C. D. Jackson Manufacturing, Inc., Fortville, Ind.

Filed Apr. 19, 1972, Ser. No. 245,315
Int. Cl. A01c *7/08*
U.S. Cl. 111—8 **9 Claims**



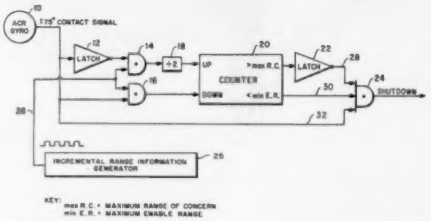
An apparatus for landscaping having a container for dispensing seed. The frame of the apparatus has a roller swingably mounted thereto positionable against the ground for rolling the ground after the seed is dispensed. A plurality of plow blades and a rake are mounted to the frame for plowing and raking the ground prior to seed dispensing. The container is removably mounted to the frame and includes a slotted bottom wall through which the seed passes. A pair of shafts are rotatably mounted to the container on either side of the slotted bottom wall to facilitate the dispensing and are geared together with one of the shafts being connected to a sprocket mounted externally to the frame. A ground engaging wheel is connected to the sprocket by a continuous chain so as to drive the sprocket and container shafts as the apparatus is moved across the ground. The sprocket and ground engaging wheels are rotatably mounted on a plate which in turn is mounted to the frame. A flange on the frame together with a removable pin secures the roller in a downward position against the ground and the plate to the frame.

3,826,210

TORPEDO ANTISELF HOMING(ASH)SYSTEM

Robert D. Timberlake, Silver Spring, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 21, 1973, Ser. No. 362,614
Int. Cl. F42b *19/06, 19/01, 19/00*
U.S. Cl. 114—24 **6 Claims**



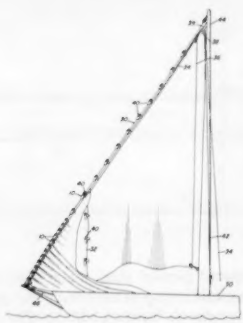
A system to prevent a torpedo from attacking the launch vessel. Whenever the torpedo heading deviates by more than a predetermined angle from the base runout course a gyro provides a contact closure. The torpedo also supplies incremental range information representing a known distance of torpedo travel, which in conjunction with the contact closure, supplies a shutdown command to stop the torpedo propulsion system.

3,826,211

SAIL HANK

Jacob Hirsch, 2 E. Sandford Ave., Harrison, N.Y. 10550

Filed Jan. 10, 1973, Ser. No. 322,539
Int. Cl. B63h *9/04*
U.S. Cl. 114—114 **5 Claims**



A hank is provided for rapidly attaching a sail to a stay. The hank has a generally cylindrical body member with a longitudinal channel therethrough large enough to accommodate and slide on a stay on which it is adapted to be mounted. A U-shaped attaching member is mounted on the body and secured to the edge of the sail through a grommet therein to form a hank thereon. A diagonal channel extends through the outer

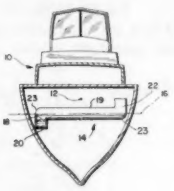
surface of the cylindrical body into the longitudinal channel therein, whereby the hank is adapted to be attached to the stay by inserting the cylindrical body member on the stay through the diagonal channel and rotating the hank until the stay is aligned and rests for slidable movememnt in the longitudinal channel. The top of the cylindrical body member is relatively flat, whereas the bottom surface is diagonal, making an angle with the diagonal channel in the body member. Accordingly, when a sail is mounted on a stay utilizing the aforesaid hanks, another sail can be hoisted on the stay to automatically remove the hanks from the stay, with the flat portion of the leading hank of the hoisted sail removing progressively the hanks of the other sail by coming into contact with the diagonal surface on each hank and rotating it, and releasing it from the stay. Thus, by using the hanks of this invention, a means is provided for rapidly changing sails merely by hoisting another sail.

3,826,212

SEMI-ACTIVE ROLL STABILIZER FOR SMALL CRAFT

Frans V. A. Pangalila, Waddinxveen, Netherlands, assignor to Flume Stabilization Systems, Inc., Hoboken, N.J.

Filed Nov. 26, 1971, Ser. No. 202,142
Int. Cl. B63b *43/06*
U.S. Cl. 114—125 **7 Claims**



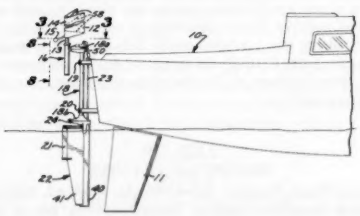
An elongated liquid-housing stabilizing tank extending from port to starboard of a water-going vessel, particularly suited for small crafts such as yachts and fishing vessels. The tank is adapted to rotate about its major axis; and tank liquid is caused to transfer, by gravity, from one end of the tank to the other. The tank may be made to rotate at a constant speed or intermittently.

3,826,213

SELF-STEERING SYSTEM

Reinhold W. Riebandt, Box 2153, Idyllwild, Calif. 92349

Filed June 15, 1971, Ser. No. 153,248
Int. Cl. B63h *25/52*
U.S. Cl. 114—144 C **11 Claims**



The present invention relates to a self-steering system that permits a boat to stay on a set course relative to an apparent wind; and to do so, the system uses a wind vane that pivots to undergo angular displacements. The resultant angular displacement of the wind vane is transmitted to a servo-tab of a rudder, the servo-tab in turn undergoing a corresponding angular displacement; so that the new rudder orientation varies the boat heading. The self-steering system further comprises a clutch for engaging and disengaging the system while setting a new course. The system also comprises means for raising the rudder out of the water.

3,826,214

ANCHOR SUPPORT

Frank Bond, 2248 S.W. 34th Ter., Fort Lauderdale, Fla. 33312

Filed July 30, 1973, Ser. No. 384,036
Int. Cl. B63b *21/22*
U.S. Cl. 114—210 **2 Claims**

An anchor support presents an upwardly facing recess for snugly receiving the crown of a Danforth or similar type anchor to store the anchor in an upright position on deck or elsewhere. The recess in the anchor support has end walls that are inclined upward and inward toward each other at substantially the same angles as the opposite ends of the crown of the anchor. A clamping bolt extends through one of these end walls on the support to hold the anchor crown snugly against the opposite end wall of the support.

3,826,215

MAGNETIC MINE DETONATOR SYSTEM

Richard C. Dyjak, Panama City, Fla., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 7, 1973, Ser. No. 395,331
Int. Cl. B63b *21/00*
U.S. Cl. 114—221 R **21 Claims**

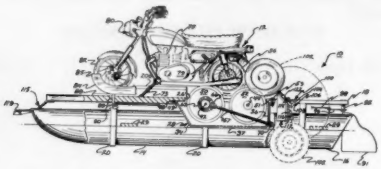
A marine minesweeping system is disclosed as incorporating a permanently magnetized steel pipe, having a polyurethane foam type buoyancy controller disposed in the bore thereof, with one end of said pipe effectively connected to a helicopter by means of a suitable length cable for the towing thereof thereby. A chain tail-like stabilizer is effectively connected to the other end of said pipe to improve the attitude stability thereof, as it is towed through water, sea water, or the like, in sufficient proximity with magnetic responsive marine mines to effect the detonation thereof.

3,826,216

WATER VESSEL PROPELLED BY MOTORIZED LAND VEHICLE

Howard A. Rhody, Grand Blanc, Mich., assignor to Erma L. Rhody a part interest, Grand Blanc, Mich.

Filed Aug. 23, 1971, Ser. No. 174,057
Int. Cl. B63h 25/00
U.S. Cl. 115—.5 A 3 Claims



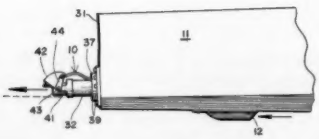
A water vessel having a pair of spaced, parallel pontoons connected by a deck on which there is fixedly supported a land traversing vehicle such as a motorcycle or a snowmobile. The water vessel includes at least one propeller operatively coupled to the power output drive of the land traversing vehicle, such that the propeller is rotated when the land traversing vehicle is operated. The water vessel further comprises a steering coupling mechanism which operatively couples the steering mechanism of the land traversing vehicle to at least one rudder carried by the water vessel such that the rudder is responsive to control the direction of the water vessel in response to the movement of the steering mechanism of the land traversing vehicle. The water vessel also comprises a rotatably mounted shaft having L-shaped outer ends extending beyond the outer portion of each pontoon. The outer ends of the shaft rotatably mount support wheels adapted to swing between a lowered position, wherein the support wheels extend below the pontoons to enable the wheels to engage the ground and permit towing of the water vessel, and a raised position wherein the support wheels may be raised above the water level so as not to impede the operation of the water vessel when it is underway. Means are provided for selectively locking the support wheels in either the raised or lowered position.

3,826,217

JET PROPULSION APPARATUS FOR BOATS

Henry L. Canova, 1575 S.W. 87th Ave., Miami, Fla. 33144

Filed Sept. 10, 1973, Ser. No. 396,119
Int. Cl. B63h 11/00
U.S. Cl. 115—12 R 2 Claims



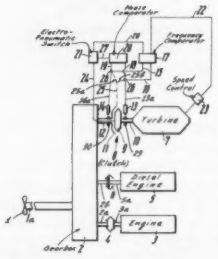
A jet propulsion apparatus for boats wherein the inlet is mounted below the hull of the boat so that upon forward movement of the boat a ramming effect is attained which causes an increased volume of water to flow into the apparatus. The apparatus having a duct extending upwardly to an impeller chamber all of whose cross sectional areas displaced by water are equal. A centrifugal pump directs the flow into a second chamber having straightening vanes therein and whose cross sectional area displaced by the water is equal to 0.707 of that of the impeller chamber thereby increasing the velocity of water by a factor of 1.414 through said second chamber and discharged by a discharge nozzle connected thereto with an arcuate deflector member both pivotally and rotationally mounted at the discharge nozzle for steering and reversing the boat.

3,826,218

COMBINATION DRIVE FOR SHIPS

Heinz M. Hiersig, Dusseldorf-Oberkassel; Klaus Hansgen, and Erwin Fleischmann, both of Witten, all of Germany, assignors to Mannesmann-Meer Aktiengesellschaft, Monchengladbach, Germany

Filed Feb. 5, 1973, Ser. No. 329,743
Claims priority, application Germany, Feb. 8, 1972, 2206513
Int. Cl. B63h 1/14
U.S. Cl. 115—34 R 4 Claims



A combination drive arrangement for ships comprises at least one regular driving engine and a gas turbine, both arranged to be releasably connected to the propeller shaft of the ship by means of shaft clutches. Rotary input and output parts of the clutch are connected to speed pickup devices which are connected to a speed comparator for disconnected clutch and to a torsional angle comparator during synchronous running of turbine and clutch output. The speed comparator when detecting speed synchronism causes the clutch to shift into its engaged position. Upon detecting an overload on the clutch by measuring the torsional angle between the primary and secondary parts thereof, the torsional angle comparator controls disengagement of the clutch to disconnect the turbine from the propeller.

3,826,219

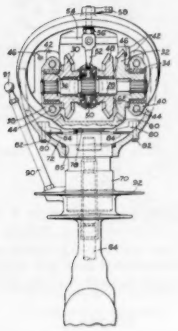
MARINE DRIVE UNITS

Clarence Frank Nossiter, Isle-of-Wight, England, assignor to Enfield Industrial Engines Limited, Cowes, Isle of Wight, England

Filed July 10, 1972, Ser. No. 270,512
Claims priority, application Great Britain, Nov. 11, 1971, 51646/71
Int. Cl. B63h 5/12
U.S. Cl. 115—35 2 Claims

The invention provides a marine drive unit of the through or over transom drive type, in which the power leg is pivoted on

the axis of a transverse shaft at the heart of the drive transmission so that the power leg can tilt upwardly and rearwardly



about that axis whilst the drive gears remain meshed, without utilising any universal joints.

3,826,220

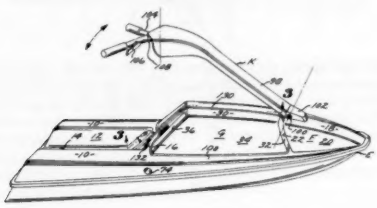
SELF-RIGHTING POWER-DRIVEN AQUATIC VEHICLE

Clayton J. Jacobson, 3500½ Highland, Manhattan Beach, Calif. 90266

Filed Jan. 22, 1973, Ser. No. 325,620

Int. Cl. A63h *5/08*

U.S. Cl. 115—70 **1 Claim**



A low draft, hydroplane-like vehicle in which the engine and associated equipment is so located in the hull that the engine not only drives a jet pump to power the vehicle but the weight of the engine and associated equipment imparts an imbalance to the vehicle except when a user is mounted thereon. Due to this imbalance the vehicle is stable only when in an upright position, and will immediately right itself from any overturned position. A further result of this imbalance is that the bow is submerged to a substantially greater depth than the stern when a user is not mounted on the vehicle, and as a result the vehicle will slowly circle should the user be inadvertently displaced therefrom. Such slow circling permits the user by swimming a short distance to recapture the vehicle.

3,826,221

CLOSURES FOR CONTAINERS

Charles Forbes Ross, Wallasey, England, assignor to Evans Medical Limited, Speke, Liverpool, England

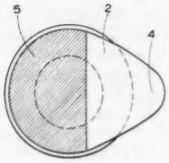
Filed June 13, 1972, Ser. No. 262,369

Claims priority, application Great Britain, June 15, 1971, 27938/71

Int. Cl. G01d *21/00*

U.S. Cl. 116—114 V **1 Claim**

A closure cap for a container has an aperture normally covered by a seal which is capable of being peeled off the cap



to expose the aperture. At least part of the seal is arranged to change colour when the cap is exposed to heat.

3,826,222

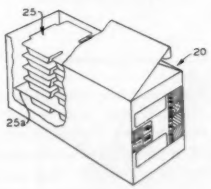
UNIT-DOSE MEDICATION HANDLING SYSTEM

Jerome M. Romick, 1992 Commons Rd., North, Reynoldsburg, Ohio 43068

Filed Feb. 12, 1973, Ser. No. 331,677

Int. Cl. G09f *9/00*

U.S. Cl. 116—121 **12 Claims**



A system for handling and dispensing pre-packaged unit doses of medicine for a large number of patients. It includes a dispensing container which is packed by the pharmacist with unit dose packs and from which the individual doses are administered to the patients, for example, by a nurse. The dispensing container has printed on its exterior, indicia, including coded sections, to indicate various times and other conditions of administering the unit doses. A label printed with corresponding indicia is provided for superimposing on the printed area of the container. By selective punching, or otherwise, of the label, before mounting on the container, the said coded section or sections on the container is exposed when it is so mounted. The exposed coded section or sections will be readily visible to the nurse to indicate the time or conditions of administering the dose or doses to a patient.

3,826,223

HALYARD SILENCING CLASP

John E. Lingo, Jr., Willingboro, N.J., assignor to Lingo, Inc., Camden, N.J.

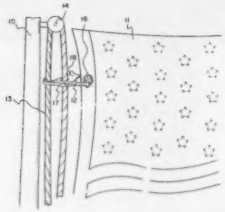
Continuation-in-part of Ser. No. 276,713, July 31, 1972, abandoned. This application Apr. 19, 1973, Ser. No. 352,497

Int. Cl. G09f *17/00*

U.S. Cl. 116—174 **3 Claims**

A flag clasp for silencing a flagpole halyard in windy conditions which includes a clew which is secured to the flag clasp. The clew encircles the inner halyard run and may be formed integral with the clasp at the point where the halyard is tied off. The clasp is formed of two substantially flat body members which are journaled together by a hollow axle through which the outer halyard is tied. Each body member terminates in oppositely directed hooks which provide an opening eye for securing the flag. Any lateral movement of the outside ha-

lyard, by reason of wind or the like, will result in the inside halyard's movement with the outside halyard rather than in the opposite direction in which it contacts the flagpole creating a noise condition.

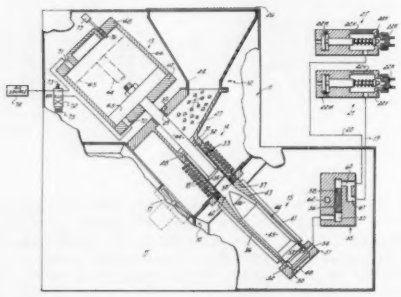


3,826,224

THERMOPLASTIC DISPENSER SYSTEM HAVING NON-CLOGGING MELTING ZONE

Robert G. Baker, Avon, and Alan B. Reighard, Bay Village, both of Ohio, assignors to Nordson Corporation, Armherst, Ohio

Filed Nov. 2, 1971, Ser. No. 194,862
Int. Cl. B05c *1/00*
U.S. Cl. 118—2 **14 Claims**



This invention relates to a system for dispensing thermoplastic materials and particularly to a system for dispensing so-called "high performance" hot melt adhesives. More specifically, the invention relates to dispensing systems in which solid thermoplastic or hot melt material is melted in small charges or batches and is then supplied upon demand in liquid form to a dispensing gun, the quantity of molten material being maintained at a minimum from the area in which it is melted to the dispensing nozzle of the gun.

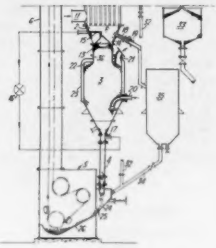
3,826,225

CARBONYL PELLET DECOMPOSER

Henry Ronald Forman, Swansea, Wales, assignor to The International Nickel Company, Inc., New York, N.Y.

Division of Ser. No. 156,442, June 24, 1971, abandoned. This application Dec. 21, 1972, Ser. No. 317,164
Int. Cl. C23c *13/02*
U.S. Cl. 118—48 **7 Claims**

Contamination of nickel pellets with carbon is minimized by thermally decomposing nickel carbonyl contained in a nickel-carbonyl-containing gas which is passed counter-current to preheated pellets in a reaction chamber by withdrawing a preponderant part of the gas from the reaction chamber before the gas reaches the hottest pellets and while the gas still contains at least about 3 grams per cubic meter of nickel as nickel carbonyl and withdrawing the remainder of the gas after substantially all the nickel carbonyl therein has been decomposed to provide a nickel-carbonyl-free gas and recirculating the nickel-carbonyl-free gas through the reactor.

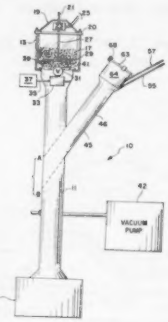


3,826,226

APPARATUS FOR COATING PARTICULATE MATERIAL

Raymond L. Clark, 628 Chapel St., Hampton, Va. 23369

Filed Dec. 12, 1972, Ser. No. 314,490
Int. Cl. C23c *13/12*
U.S. Cl. 118—49.1 **10 Claims**



Apparatus and method of depositing controlled thickness coatings on small particles including a drop tower for gravity feed of the particles from a first hopper to a second hopper and wherein the particles are induced to spin during fall and pass through a vaporized coating medium; said medium comprising an ion beam directed from an ion emitter disposed laterally offset from, and shielded with respect to, said drop tower.

3,826,227

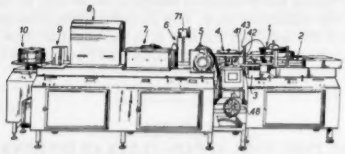
TINNING MACHINE

Stanley Watson Allison, Formby, near Liverpool, England, assignor to D. T. & G. (Designs, Tools & Gauges) Limited, Seacombe, Wallasey, Cheshire, England

Filed Dec. 13, 1972, Ser. No. 314,589
Int. Cl. B05c *3/12*
U.S. Cl. 118—60 **20 Claims**

The present specification describes a tinning machine and a method for tinning at least one edge of a strip of metal. The machine comprises a supply station for storing said strip in the form of a coil the axis of the coil being vertical, a heated drum being arranged to be rotatably driven and to heat at least part of the width of said strip as said strip is uncoiled and passed from the supply station. A flux bath is arranged to receive the heated strip from said drum and to coat the strip with flux in

the region of lower edge of said strip, a constant flow tinner being arranged to tin the strip where coated with flux. An arrangement of knives is provided for removing excess tin, together with a hot water washer arranged to receive and wash



the tinned strip, a de-wetting station for drying the strip passing from the washer, a polishing and a further drying station and a bollard adapted to receive and coil the tinned strip at a constant torque.

3,826,228

SURFACE APPLICATION PROCESSING DEVICE

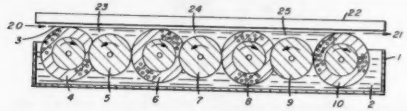
Edward Charles Timothy Samuel Glover, London, England, assignor to Eastman Kodak Company, Rochester, N.Y.

Filed July 31, 1972, Ser. No. 276,495

Claims priority, application Great Britain, Aug. 5, 1971, 36905/71

Int. Cl. B05c *1/08*

U.S. Cl. 118—255 **7 Claims**



A surface application processing device comprising one or more solution applying rollers, each having a resilient solution absorbing peripheral layer partially immersed in a processing solution, and a solution expelling roller cooperating with the solution applying roller to form and maintain a solution pool during rotation of the rollers. The material to be processed is transported in contact with the solution applying rollers and solution pool for processing.

3,826,229

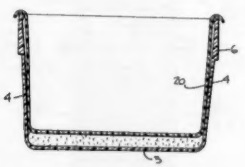
ANIMAL CAGE

Anthony V. Classe, New York, N.Y., and Robert P. Mehn, Middletown, N.J., assignors to Ipco Hospital Supply Corporation, Valhalla, N.Y.

Filed May 19, 1972, Ser. No. 254,898

Int. Cl. A01k *01/00*

U.S. Cl. 119—17 **1 Claim**



An animal cage in which bedding material is in the cage and a seal is provided to prevent the bedding material from spilling out during shipment and storage. The seal comprises a removable retaining element, part of whose upper portion extends over the top edge of the cage side walls and outwardly and downwardly along the outside of the cage. This part of the upper portion of the retaining element prevents inward displacement of the remainder of the upper portion.

3,826,230

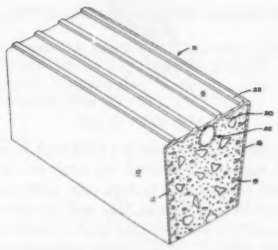
FLOORING SYSTEM FOR STIES AND OTHER ANIMAL SHELTERS

Robert S. Jones, Pontiac, and Harry W. Smathers, Aurora, both of Ill., assignors to said Jones, by said Smathers and Wesley E. Jones, Park Forest South, Ill.

Filed May 14, 1973, Ser. No. 360,347

Int. Cl. A01k *01/00*

U.S. Cl. 119—28 **1 Claim**



A flooring system for sties and other animal shelters utilizing permanent, fluid conduit thermo-plastic slats or channel members which are adapted to be filled with concrete or the like. The filled channel members have traction surfaces on the exterior of their top walls. The inside of each top wall has arcuate groove means to properly position the conduit within the upper portion of the channel members.

3,826,231

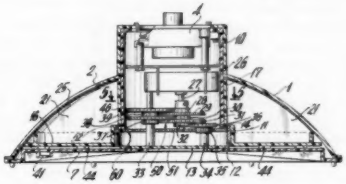
AUTOMATIC ANIMAL FEEDER

Beverley Crawford, 315 E. 65th St., and Genelle Jenkins, 107 E. 60th St., both of New York, N.Y. 10022

Filed July 5, 1973, Ser. No. 376,894

Int. Cl. A01k *5/02*

U.S. Cl. 119—51.12 **10 Claims**



A pet feeding apparatus includes a tray assembly having a number of compartments in which food and/or liquids can be placed. The tray assembly is mounted on a rotating housing and is partially enclosed by a cover having at least one aperture which provides access to the tray compartment adjacent to the aperture. A timer activates a motor which rotates the tray assembly beneath the cover so that the cover aperture provides access to the various tray compartments at predetermined time intervals.

3,826,232
COMPOSITION AND METHOD FOR THE CONTROL OF FLEAS ON DOMESTICATED ANIMALS

Thomas E. Duffey, and William R. Coleman, both of Miami, Fla., assignors to Pet Chemicals, Incorporate, Miami Springs, Fla.

Continuation-in-part of Ser. No. 73,684, Sept. 18, 1970, which is a continuation-in-part of Ser. No. 28,110, April 13, 1970, abandoned. This application May 21, 1971, Ser. No. 145,706

Int. Cl. A01k *29/00*; **B43k** *21/08*; **A01n** *17/00*

U.S. Cl. 119—157 **6 Claims**

A pest control composition in a solid stick form is provided for topical application around the neck or on the face of domesticated animals such as dogs, cats, cattle, horses and the like to control fleas, lice, ticks, flies, and like pests. Topical application about the neck or face of the animal in an amount ranging from about 0.1 to 0.3 grams, preferably about 0.13 to 0.25 grams, per kilogram of body weight results in the elimination of all fleas at the end of twenty to twenty four hours, a single application being effective for one to two weeks in most cases without evidence of irritation to the animal. The stick composition of the present invention comprises 0-(2-isopropoxyphenyl)-N-methyl-carbamate as the active ingredient uniformly dispersed in a compatible solid base material and in a stable state. The present invention provides a pesticidal package for applying the composition to the neck or face of the animal.

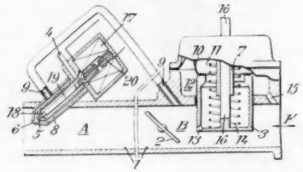
3,826,233
INJECTION DEVICES FOR INTERNAL COMBUSTION ENGINES

Andre Louis Mennesson, Neuilly-sur-Seine, France, assignor to Societe Industrielle De Brevets Et D'Etudes S.I.B.E., Neuilly-sur-Seine, France

Continuation of Ser. No. 12,700, Feb. 19, 1970. This application Jan. 18, 1972, Ser. No. 218,823

Int. Cl. F02m *51/00*

U.S. Cl. 123—119 R **2 Claims**



An improved injection device is provided for internal combustion engines. It has on one hand an induction pipe, upstream of a main throttle actuated by the driver, an auxiliary throttle which is opened automatically and progressively in proportion with the increase in air-flow in the pipe, and on the other hand, a source of pressurized liquid fuel connected to an injection orifice. The latter communicates with a zone of the induction pipe downstream of the main throttle. It has also a metering system sensitive to the position of the auxiliary throttle and adapted to regulate the flow of injected fuel in such manner that the richness of the air-fuel mixture passing into the induction pipe is substantially constant, at least under certain operating conditions of the engine. The injection orifice is aligned with an auxiliary orifice opening into the said zone of the induction pipe. The space between the two orifices forms a chamber where the pressure is independent of that in the said zone of the induction pipe. The chamber communicates, at least when the auxiliary throttle is in the slight air-flow position, with the portion of the induction pipe bounded by its two throttles.

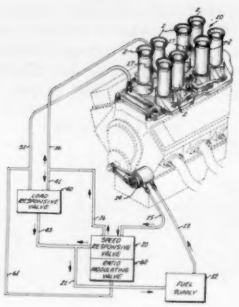
3,826,234
FUEL INJECTION APPARATUS IN AN INTERNAL COMBUSTION ENGINE

Vincent J. Cinquegrani, 333 W. Second St., Scottsdale, Ariz. 85251

Continuation of Ser. No. 83,040, Oct. 22, 1970. This application Oct. 11, 1972, Ser. No. 296,676

Int. Cl. F02m *69/00*

U.S. Cl. 123—139 AW **9 Claims**



Apparatus for injecting fuel into an internal combustion engine in predetermined amounts responsive to operating conditions of the engine.

3,826,235
MEANS FOR USE IN CONJUNCTION WITH A CARBURETOR OF AN INTERNAL COMBUSTION ENGINE FOR IMPROVING THE COMBUSTION OF FUEL

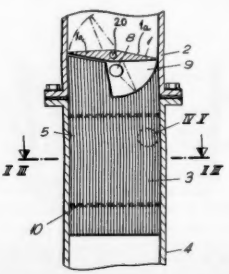
Max Pasbrig, Orselina/Ticino, Switzerland, assignor to Lacrex Brevetti S. A., Minusio, Switzerland

Filed Nov. 14, 1972, Ser. No. 306,432

Claims priority, application Germany, Nov. 26, 1971, 2158849

Int. Cl. F02m *29/00*

U.S. Cl. 123—141 **12 Claims**



Means for use in conjunction with the carburetor of an internal combustion engine wherein, for improving the mixture

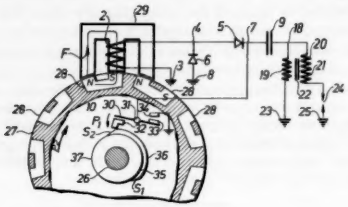
of air and fuel, an atomizer sleeve is arranged in a suction channel directly behind the throttle valve. The atomizer sleeve is provided with guide elements possessing approximately radially extending impact elements and throughpassage openings. The guide elements extend essentially over the entire cross-section of the suction flow and are arranged in spaced relationship with regard to one another. The atomizer sleeve is provided at its end neighboring the throttle valve with a substantially segmented spherical-shaped recess, the configuration of which exactly corresponds to the compartment swept by one-half of the throttle valve upon opening the throttle valve.

3,826,236

IGNITION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Hans Thorsten Henrik Carlsson, Amal, Sweden, assignor to Aktiebolaget Svenska Elektromagneter

Filed Sept. 28, 1972, Ser. No. 292,914
Claims priority, application Sweden, Oct. 1, 1971, 12474/71
Int. Cl. F02p *1/00*
U.S. Cl. 123—148 R **4 Claims**



An ignition system has a capacitor charged by a magneto, and switch means responsive to magneto rotation and connected across said magneto for terminating charging of the capacitor before the capacitor is fully charged.

3,826,237

TWO-STAGE FUEL INJECTION COLD START METHOD AND APPARATUS FOR CARRYING OUT SAME

Sigmund M. Csicsery, Lafayette, and Bernard F. Mulaskey, Fairfax, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Filed Oct. 4, 1972, Ser. No. 295,030
Int. Cl. F02m *67/14, 27/02*
U.S. Cl. 123—179 L **8 Claims**

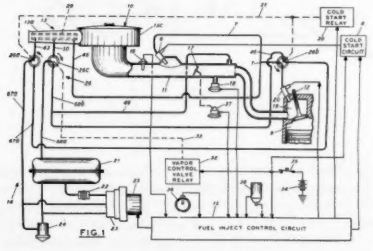


FIG. 1

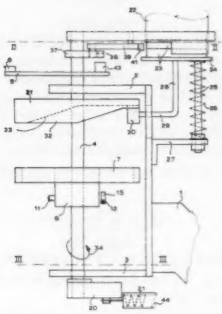
As cold start is initiated in a spark-ignition internal combustion, fuel injection engine, lower molecular weight constituents of a full-range gasoline are selectively eluted by an elution system including an adsorbent bed of adsorbent material for separate but simultaneous use at a cold start valve attached to the intake manifold of the engine as well as at a series of injector valves positioned adjacent the combustion chambers of the engine. The adsorbent bed forms an elution zone within a cannister assembly in fluid contact with the full-range gasoline. The adsorbent material--usually in pelletized form--is preferably housed within a tubular means being positioned within a much larger shell housing in fluid contact with a valve and conduit network. Entry of the full-range gasoline into the elution zone as well as of the resulting lower molecular weight effluent into the engine is controlled by the valve and conduit network under control of a fuel injection control circuit. A vapor emission control system can also be housed within the cannister assembly and undergo selective operation to prevent escape of vapor emissions originating from within the gasoline tank.

3,826,238

A SPRING ACTUATED DEVICE FOR PROJECTING CLAY PIGEONS

Ib Schreiner Hansen, Aaso DK-5953, Tranekaer, Denmark

Filed Oct. 24, 1972, Ser. No. 300,302
Claims priority, application Germany, Oct. 26, 1971, 2153254; Denmark, May 23, 1972, 2542/72
Int. Cl. F41b *3/04*
U.S. Cl. 124—8 **6 Claims**



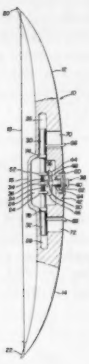
An apparatus for the tossing of disc-shaped objects, the so-called clay pigeons including a main frame carrying a main shaft and an ejector arm. A crank arm is mounted on the frame and driven by an ejector spring. A motor drives a worm gear and worm wheel and a double coupling means comprising a one-sided overrunning clutch to allow the shaft to overrun the motor drive and a releasable clutch interposed between and interconnecting the worm wheel and the main shaft to release the shaft from the worm wheel when the crank arm is in its dead center position and the spring fully tensioned. A trigger locks and releases the releasable clutch in the position in which the ejector spring is fully tensioned and the crank arm is in its dead center position. An actuator reacts with the trigger to release the releasable clutch whereupon the motor drives the main shaft via the worm gear and the worm wheel through the one-sided overrunning clutch and the crank arm is driven off its dead center position. After a short rotary motion, the ejector spring via the one-sided overrunning clutch produces the additional speed necessary to launch a clay pigeon from the ejector arm without jerking the throwing arm. The pigeons are caused to be moved to the ejector arm by actuation of a cam follower connected to an elevator. The elevator carries the pigeons one at a time, from a stack, to the ejector arm. While the elevator is carrying a pigeon to the ejector arm a cam operated member is caused to move into engagement with the remaining stack of pigeons so as to support the remaining stack of pigeons.

3,826,239

ARCHERY BOW WITH BOWLIMB TENSIONING DEVICE

James R. Palma, 1502 Curry Rd., Schenectady, N.Y. 12306

Filed Oct. 19, 1973, Ser. No. 407,801
Int. Cl. F41b 5/00
U.S. Cl. 124—23 R 6 Claims



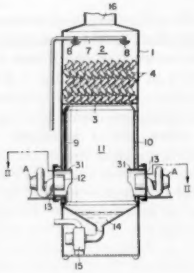
A bow in which reinforcing members can be propelled toward each of the bowlimbs to change the tension of the bowlimbs quickly. The reinforcing members are normally retracted and held in a cocked position against the bias of springs. Energy storage propulsion device is triggered to permit the extension of the reinforcing members along the bowlimbs. Retractor projections are manually operated on to withdraw the reinforcing members against the bias of the springs.

3,826,240

DIRECT CONTACT WATER HEATER

Kingo Miyahara, Tokyo, Japan, assignor to Kabushiki Kaisha Dowa, Tokyo, Japan

Filed Feb. 23, 1973, Ser. No. 335,126
Int. Cl. F24h 1/10
U.S. Cl. 126—355 4 Claims



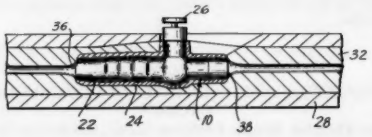
A water heater comprising a body and a lattice-like partition plate dividing the interior of the body into an upper heat absorbing chamber and a lower combustion chamber, burner means being provided in said combustion chamber so that the flow of combustion product is directed upwardly from the combustion chamber through the heat absorbing chamber, cold water being supplied into said heat absorbing chamber and passed downwardly as a counterflow to and in direct contact with said flow of combustion product. A plurality of heat absorbing members are disposed in said heat absorbing chamber and the cold water is supplied onto the heat absorbing members.

3,826,241

IMPLANTING METHOD

Louis Bucalo, Holbrook, N.Y., assignor to Investors in Ventures, Inc., New York, N.Y.

Filed Oct. 16, 1972, Ser. No. 298,024
Int. Cl. A61f 1/24; A61b 19/00
U.S. Cl. 128—1 R 9 Claims



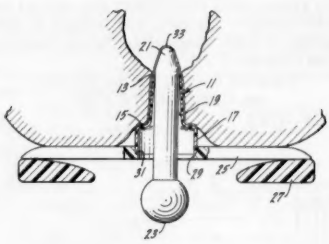
A method for implanting artificial devices in the bodies of living creatures such as human beings. The device is initially embedded in tissue of the living creature where the device is permitted to remain until ingrowth of tissue into intimate contact with the exterior surface of the device is completed. Then the device is removed while retaining thereon a layer of the tissue which has grown into contact with the device, and the device with this layer of tissue thereon is then implanted in the body at the location where the device is to be used in the body with tissue at this latter part of the body engaging the tissue which has previously grown onto the device, so that the possibility of rejection of the device is reduced.

3,826,242

METHOD AND APPARATUS FOR TREATMENT OF HEMORRHOIDS

Paul J. Eggers, 320 S. Green Bay Rd., Lake Forest, Ill. 60045

Filed Apr. 16, 1973, Ser. No. 351,472
Int. Cl. A61m 29/00
U.S. Cl. 128—1 R 5 Claims



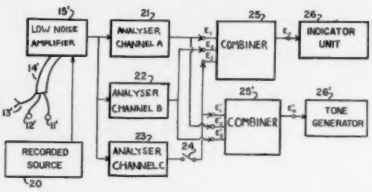
A method and apparatus for reducing the pain, distention and bleeding of hemorrhoids during defecation. The method involves maintaining pressure on the hemorrhoidal veins of the anal canal, lower rectum and anal area during defecation to prevent swelling and distention of the hemorrhoidal veins. The method also includes preventing extrusion of the internal hemorrhoidal veins out of the anal canal during defecation. In performing the method, a tubular member is inserted in the anal canal so that it engages the walls of the canal and the area around the rectal opening. This tubular member is held in place during defecation. The inner or forward end of this tubular member is closed during insertion and then opened after it is positioned in the anal canal to permit excrement to pass therethrough.

3,826,243

BRAINWAVE ANALYSIS AND FEEDBACK METHOD AND APPARATUS

Weston Arthur Anderson, 763 La Para Ave., Palo Alto, Calif. 94306

Filed July 10, 1972, Ser. No. 270,520
Int. Cl. A61b 5/04
U.S. Cl. 128—2.1 B 14 Claims



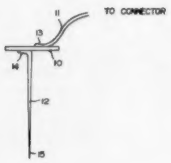
A method and apparatus for minimizing spurious responses in brainwave analysis and feedback instruments. A plurality of Fourier amplitude coefficients of the incoming brainwave signals are determined, and these coefficients are appropriately combined to be representative of certain brainwave states and to suppress noise signals that have a relatively wide bandwidth.

3,826,244

THUMBTACK MICROELECTRODE AND METHOD OF MAKING SAME

Michael Salcman, New York, N.Y., and Martin J. Bak, Germantown, Md., assignors to The United States of America as represented by the Secretary of the Department of Health, Education and Welfare, Washington, D.C.

Filed July 20, 1973, Ser. No. 381,234
Int. Cl. A61b 5/04
U.S. Cl. 128—2.1 E 14 Claims



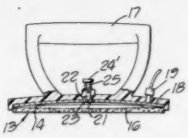
A thumbtack microelectrode for making extracellular chronic recordings from single nerve cells in the cerebral cortex in unrestrained animals over prolonged periods of time comprises a rigid electrode shaft, which is microwelded to one side of a tack head-like disc, and a flexible electrical conductor which is microwelded to the opposite side of the tack head-like disc. After a cleaning operation including ultrasonic desiccation the entire microwelded assembly is electrically insulated. The insulation covering the recording tip of the electrode shaft which is tapered, prior to the cleaning and insulating operations, by electrolytic etching, is then removed so as to expose a small area for use as the recording surface.

3,826,245

ELECTRODES EMPLOYING DISPOSABLE ELECTROPODS FOR CARDIAC INSTRUMENTS

Horst Funfstuck, Oxnard, Calif., assignor to Statham Instruments, Inc., Oxnard, Calif.

Filed Feb. 9, 1973, Ser. No. 331,050
Int. Cl. A61b 5/04; A61n 1/18
U.S. Cl. 128—2.06 E 1 Claim



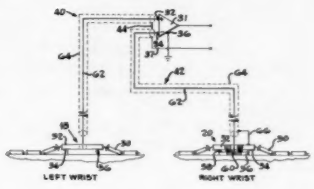
This invention relates to disposable electrode pads which may be used with cardiac devices, such as ECG, defibrillator or pacemaker devices. The pads are in the form of a foil bag containing an electrolyte. The bags are easily rupturable so that the electrolyte is applied to the surface of the human body.

3,826,246

APPARATUS FOR SENSING PHYSIOLOGICAL POTENTIALS

William J. Raddi, Philadelphia, and Robert William Johnson, Levittown, both of Pa., assignors to ESB Incorporated, Philadelphia, Pa.

Filed Mar. 7, 1973, Ser. No. 337,262
Int. Cl. A61b 5/04
U.S. Cl. 128—2.06 E 9 Claims



Apparatus is provided for sensing physiological potentials of a living body. There is provided a first band for at least partially encircling a part of the living body and having a first electrode mounted thereon. The first electrode is adapted for connection to an instrument for amplifying the physiological potentials of the living body. A second band is provided for at least partially encirling another part of the living body and has a second and a third electrode located thereon. The second and third electrodes each are adapted for connection to the instrument for amplifying the physiological potentials of the living body.

3,826,247

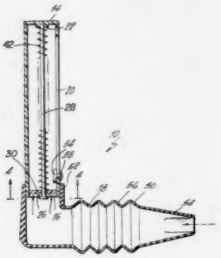
PULMONARY ACHIEVEMENT TRAINER

Asa P. Ruskin, 865 West End Ave., New York, N.Y. 10025, and Wilbur J. Gould, 115 Central Park West, New York, N.Y. 10023

Filed June 27, 1972, Ser. No. 266,663
Int. Cl. A61b 5/08
U.S. Cl. 128—2.08 1 Claim

A pulmonary achievement trainer for registering the strongest breath attained by a patient during a predetermined test or therapy period. The pulmonary achievement trainer employs a tube having a special L-shaped mouthpiece and further having an air inlet and a spring pressed plate actuated by air

passing into the tube. An indicator is attached to the plate and positioned outwardly of the tube for cooperating with indicia

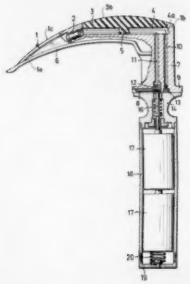


on the tube for providing a direct readout of the actual strongest breath attained by the patient.

3,826,248
LARYNGOSCOPE

Georg Gobels, Grungurtelstr 10, 5038, Rodenkirchen near Cologne, Germany

Filed Sept. 20, 1972, Ser. No. 290,572
Claims priority, application Germany, Sept. 21, 1971, 2147054
Int. Cl. A61b *1/06, 1/24, 1/26*
U.S. Cl. 128—11 **7 Claims**



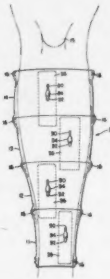
The invention relates to a laryngoscope for examining the larynx or the like comprising a handle element and a spatula detachable therefrom with a longitudinally extending lateral member serving as a tongue deflector.

3,826,249
LEG CONSTRICTING APPARATUS

Arthur L. Lee, 2050 Tremont, Columbus, Ohio 43221, and Milton M. Michaels, 5559 Hampton, Pittsburgh, Pa. 15206

Filed Jan. 30, 1973, Ser. No. 328,133
Int. Cl. A61h *1/00*
U.S. Cl. 128—24 R **9 Claims**

Leg constricting apparatus includes an air pressure control system for supplying air under pressure to inflatable sacs within a plurality of elastically extensible wrappings interlocked around the lower extremity of an immobilized patient to aid in the venous return of blood to the heart and to prevent thrombus formation. Each of the plurality of elastically extensible wrappings are hooked to adjacent wrappings in overlapping arrangement around the extremity for a suitable length therealong and surrounds an elastic stocking fitted firmly over the extremity. An air inflatable sac is sewn onto the outside end of each of the plurality of extensible wrappings which envelop the sacs in folds around the extremity. Compressed air supplied from an air pressure control system is fed by conduits to a cam actuated air valve for sequentially delivering compressed air at preselected timed intervals to inflate the sacs. The sequential intermittent supply of com-

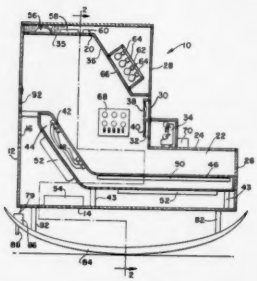


pressed air to each of the wrappings inflates and deflates the sacs therein exerting pressure against the elastically extensible wrappings to thereby exert rhythmic pressure upon the extremity and to constrict the muscles thereof. The rhythmic constriction of the extremity muscles squeezes the blood in the veins to aid the venous return of blood to the heart.

3,826,250
APPARATUS

Hunter D. Adams, Arlington, Va., assignor to Zany Productions, Inc., Alexandria, Va.

Filed July 12, 1972, Ser. No. 271,190
Int. Cl. A61h *21/00*
U.S. Cl. 128—24.2 **11 Claims**



A sensory stimulator comprising an enclosed housing, a seat within the housing, and a plurality of sensory stimuli for stimulating the senses of a person seated within the housing.

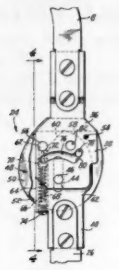
3,826,251
LOCKING KNEE JOINT FOR ORTHOPEDIC LEG BRACE

Charles Ross, 7510 Persimmon Tree Ln., Bethesda, Md. 20034

Filed Jan. 4, 1973, Ser. No. 320,957
Int. Cl. A61f *3/00*
U.S. Cl. 128—80 F **8 Claims**

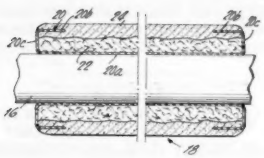
A pivoted knee joint for an orthopedic leg brace provides for both pivoting and relative sliding movement. When the user's weight is placed on the braced leg and the leg is substan-

tially straight, the joint is locked against pivoting but is freely pivotable when the leg is lifted. If the weight of the user is



placed on the leg while the leg is partially bent at the knee, the joint locks against pivoting to prevent collapse of the user.

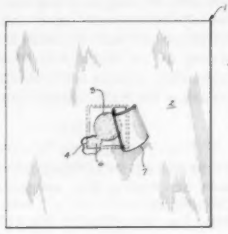
3,826,252
EDGE WRAPPING FOR CASTS AND METHOD FOR USING SAME
Joseph P. Laico, 9 Ardsley Dr., New City, N.Y. 13214
Filed July 14, 1972, Ser. No. 271,769
Int. Cl. A61f *5/04*
U.S. Cl. 128—91 R **7 Claims**



There is disclosed an edge wrapping for use in making casts. A strip of material is wrapped around each end of the part to be casted; thereafter, a soft lining and the cast material are applied, and the free edge of each strip is folded back and embedded in the cast material. By using edge wrapping strips, as opposed to the conventional cylindrical wrapping (commonly called "stockinette"), the disadvantages of the latter are avoided and a number of advantages are obtained.

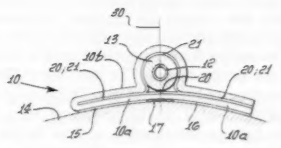
3,826,253
SURGICAL DRAPE WITH CLOSED FENESTRATION
Ray E. Larsh, and Donald I. Urbansky, both of Milwaukee, Wis., assignors to Kleen Test Products, Inc., Milwaukee, Wis.
Filed Feb. 2, 1973, Ser. No. 328,905
Int. Cl. A61f *13/00*
U.S. Cl. 128—132 D **3 Claims**

A surgical drape includes a main drape body of suitable material, with a fenestration disposed therein. A sheet of imperforate transparent film is provided with at least one surface coated with a tacky adhesive. The film is dimensioned larger than the fenestration and is positioned with the tacky surface adhering to the drape body surrounding the fenestration, which is completely closed by the sheet. The tacky surface is exposed through the fenestration, and a release liner is peelably secured thereto. Upon removal of the release liner and draping of the patient, the exposed tacky film is im-



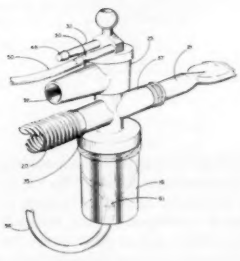
mediately pressed directly onto the area to be incised, and the said area remains fully protected from contamination.

3,826,254
NEEDLE OR CATHETER RETAINING APPLIANCE
Eli K. Mellor, Burbank, Calif., assignor to Verco Industries, Newport Beach, Calif.
Filed Feb. 26, 1973, Ser. No. 335,478
Int. Cl. A61m *25/02*
U.S. Cl. 128—133 **6 Claims**



An appliance for securely retaining a needle or catheter type device in operative position on a patient's body.

3,826,255
INTERMITTENT POSITIVE PRESSURE BREATHING MANIFOLD
Harold R. Havstad, Lakewood, and Donald F. Diedrich, Temecula, both of Calif., assignors to Hudson Oxygen Therapy Sales Company, Temecula, Calif.
Filed June 22, 1972, Ser. No. 265,390
Int. Cl. A61m *11/00*
U.S. Cl. 128—194 **10 Claims**



An improved intermittent positive pressure breathing manifold device comprises a substantially vertical main tube having open upper and lower ends, a diaphragm adjacent the upper main tube opening for intermittent closing thereof and

which diaphragm is in sealing engagement with an upper cap portion located above the main tube, an exhalation port adjacent the upper main tube end and in communication with the lower main tube opening, and first and second gas ports along the main tube between the upper and lower main tube ends. A preferred embodiment includes an improved nebulizer incorporating an air nozzle and coaxial aspirator cap each having concentric orifices substantially aligned with the central vertical axis of the main manifold tube.

3,826,256

CATHETER DELIVERY DEVICE

Gordon E. Smith, Sun Prairie, Wis., assignor to Medidyne Corporation, Chicago, Ill.

Filed Jan. 13, 1972, Ser. No. 217,468
Int. Cl. A61m *5/18*
U.S. Cl. 128—214.4 **27 Claims**

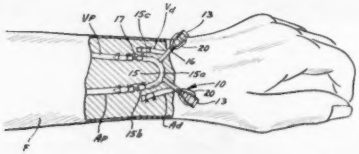
In a device for ejecting a catheter into a passageway like a blood vessel, the device including a housing containing a catheter extending or extendable into a feeding nose, such as a cannulated needle, the housing interior to be fluid pressurized to effect fluid flow around the catheter. The catheter is inwardly compressible and of a size where the outer diameter is about equal to and preferably somewhat greater than the inner diameter of the needle lumen. The build-up of fluid pressure within the housing of the device was found to compress the catheter making it of a smaller diameter than the needle lumen and in the process forming, at least during the initial stages of catheter movement, a catheter with a piston-like profile so that the catheter is impelled by fluid friction and piston action.

3,826,257

PROSTHETIC SHUNT

Theodore J. Buselmeier, 520 Washington Ave., S.E., Minneapolis, Minn. 55414

Filed July 14, 1972, Ser. No. 272,077
Int. Cl. A61m *05/00*
U.S. Cl. 128—214 R **13 Claims**



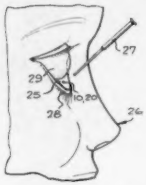
A prosthetic device partially implantable in the human body for repeated intermittent access to the blood in the circulation system, the prosthetic device comprising a subcutaneous U-shaped shunt of preshaped Silastic, the ends of the U-shaped shunt having tubular tips or other means for connection with an artery and a vein to shunt blood from the artery to the vein; at least one access tube connected with the shunt between the ends thereof and in blood-flow communicating relation, at least the distal end of the access tube to be located at the exterior of the person's skin, and a removable plug entirely filling the full length of the access tube and being removable to obtain access to the blood in the shunt tube.

3,826,258

GRADUAL RELEASE MEDICINE CARRIER

Samuel V. Abraham, 16026 Royal Oaks Rd., Encino, Calif. 91316

Filed Feb. 7, 1972, Ser. No. 224,138
Int. Cl. A61m *31/00*
U.S. Cl. 128—260 **5 Claims**



A medicament carried within a perforate or semipermeable shell is gradually released, as by dissolution into body fluids, to provide effective therapy with reduced concentration and dosage. The medicament may be in dry powdered form. For treatment of the eye, the carrier comprises a capsule less than 1 millimeter in diameter which is placed in the conjunctival sac or mounted in a contact lens. The capsule may be colored for easy location and removal, may be absorbable by the body, or may gradually swell to allow washout by the tears. For glaucoma treatment, less than 1 milligram of pilocarpine or phospholine in a single sustained release capsule may be an adequate daily dosage. In another embodiment a soft contact lens itself may serve as the medicine containing carrier.

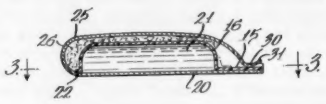
For burn, ulcer, or wound treatment, the carrier may be of planar configuration or incorporated in a film forming spray comprising many minute particles or capsules each containing a medicament. The resultant film will protect the tissue from exposure, will provide sustained release medication, and may be absorbable to eliminate the need for removal with concomitant damage to newly formed granulation tissue.

3,826,259

SELF-CONTAINED DISPOSABLE SWAB-TYPE MEDICATION APPLICATOR

James D. Bailey, Decatur, Ill., assignor to Health Products, Inc.

Filed June 4, 1973, Ser. No. 366,799
Int. Cl. A61m *35/00*; **A61j** *1/00*
U.S. Cl. 128—269 **5 Claims**



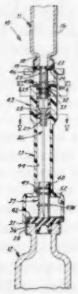
A self-contained disposable medication applicator with an encapsulated topical medicine or other fluid wherein a relatively rigid section of material is provided with a recess to hold the fluid and a flexible strip has one part thereof sealed to the relatively rigid material to close off the recess and encapsulate the liquid, with an adjacent length of flexible material having swab material, such as cotton, secured thereto and with a further length of the flexible material peelably attached to the rigid material in a manner to have the flexible material arranged in a generally U-shape, with the swab material captured within the flexible material and positioned to be impregnated by the liquid when the liquid is discharged from the recess. The discharge of the fluid is facilitated by having a manually fracturable seal at one end of the recess whereby manual squeezing of the medication applicator releases the fluid for impregnating the swab material and the flexible

material may then be peeled from the relatively rigid base material and folded back upon itself to expose the swab material for use.

3,826,260
VIAL AND SYRINGE COMBINATION

Fred M. Killinger, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Dec. 27, 1971, Ser. No. 212,592
Int. Cl. A61j *5/00;* **A61m** *5/32*
U.S. Cl. 128—272 **1 Claim**



A syringe barrel having a perforable seal closing an end thereof and a hollow cylindrical portion of reduced diameter extending beyond the seal. A vial having a stoppered opening and a hollow cylindrical portion of reduced diameter extending beyond the stopper. A double-ended cannula is slidably received in the reduced portions of the barrel and the vial for perforating the seal and the stopper to communicate with and between the interiors of the syringe and the vial. A support on the cannula is removably engaged with the reduced portion of the barrel. An elongated tubular sheath extends between and is slidably supported upon the cannula support and the reduced portion of the vial.

3,826,261
VIAL AND SYRINGE ASSEMBLY

Frem M. Killinger, Portage, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation-in-part of Ser. Nos. 212,592, Dec. 27, 1971, and Ser. No. 287,661, Sept. 11, 1972. This application Oct. 25, 1972, Ser. No. 300,649
Int. Cl. A61j *1/06*
U.S. Cl. 128—272 **5 Claims**

A syringe having a needle connected to one end thereof and a hollow cylindrical chamber adapted for communication with said needle. A vial has a sealed opening and a hollow cylindrical portion of reduced diameter extending beyond the seal. The needle is slidably receivable into the reduced portion of the vial for perforating the seal to communicate with and between the interiors of the hollow chamber and the vial. An elongated tubular sheath extends between and is slidably supported upon the syringe and the vial.

3,826,262
STOMA DRAINAGE APPLIANCE

Jack R. Blackwood, Largo, Fla., assignor to Howmedica, Inc., New York, N.Y.

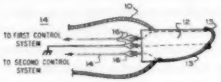
Filed Jan. 17, 1973, Ser. No. 324,408
Int. Cl. A61f *5/44*
U.S. Cl. 128—283 **4 Claims**

A stoma drainage appliance comprising a face plate comprising an inner aperture adapted to surround a stoma of any size and an inner recessed circumferential shoulder in such aperture having a lip protruding into said aperture, and aperture size reducing means having resilient locking means adapted to releasably fit about said protruding lip so as to form a fluid-tight seal between said plate and said reducing means and an opening therein of a size smaller than that of said aperture.

3,826,263
ELECTRICALLY HEATED SURGICAL CUTTING INSTRUMENT

John M. Cage, Los Altos; Robert F. Shaw, San Francisco, and Paul E. Stoft, Menlo Park, all of Calif., assignors to Robert F. Shaw, Palo Alto, Calif.

Division of Ser. No. 63,645, Aug. 13, 1970. This application Aug. 7, 1972, Ser. No. 278,684
Int. Cl. A61b *17/38;* **A61n** *3/00*
U.S. Cl. 128—303.1 **3 Claims**



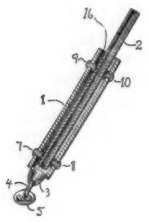
A surgical cutting instrument includes an electrically heated cutting edge and an automatic control system for maintaining the cutting edge at a constant high temperature for sterilizing the blade, cutting tissue, and cauterizing the incised tissue to reduce hemorrhage from the cut surfaces of the tissues (hemostasis).

3,826,264

THORN AND SPLINTER PULLERS

Roland E. Gunther, 100 Joanne St., Princeton Junction, N.J. 08550

Filed Jan. 30, 1973, Ser. No. 327,930
Int. Cl. A61b 17/36
U.S. Cl. 128—303.1 2 Claims



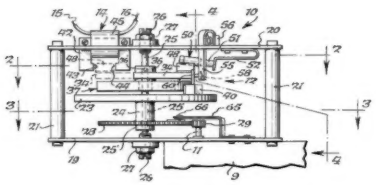
A means is provided for cooling a cold-congealable fluid in simultaneous contact with a probe and a foreign body imbedded in the skin thereby forming a substantial bridge between probe and object so that a pulling force can be exerted on the object to effect its removal.

3,826,265

MECHANICAL PULSE GENERATOR FOR CARDIAC PACER

Francis A. Giori, Clarence, and Alvin S. Topolski, Tonawanda, both of N.Y., assignors to Medtronic, Inc., Minneapolis, Minn.

Filed Oct. 5, 1972, Ser. No. 295,184
Int. Cl. A61n 1/30
U.S. Cl. 128—419 P 13 Claims



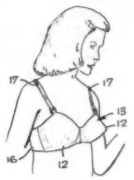
A medical electronic pulse generator comprising a source delivering mechanical power at a regulated rate, a motion producing means coupled to the output of the source for cyclically producing a relatively rapid mechanical motion of a duration less than that of each cycle of said pulse generator and having a consistent velocity characteristic, and a transducer means operatively associated with the motion producing means for converting the motion produced thereby to an electrical pulse. The motion producing means includes a first inertial member or element drivenly connected to the source for a portion of each cycle and freely movable during the remainder of each cycle, a second inertial member or element, and an elastic coupling means (e.g. a torsion spring) connected between the inertial members. The inertial members are stopped at predetermined times during each cycle of pulse generation, whereby the kinetic energy of one of the members after generation of a pulse is utilized to store energy in the torsion spring and to position the inertial members for the next cycle. The electrical output pulses are produced at a constant repetition frequency as determined by the mechanical power source and at a constant amplitude as determined by the consistent velocity characteristic of the motion producing means.

3,826,266

BRASSIERE

Selma Alpert, 12720 Vose St., Hollywood, Calif. 91605

Filed Dec. 26, 1972, Ser. No. 318,248
Int. Cl. A41c 3/00
U.S. Cl. 128—435 8 Claims



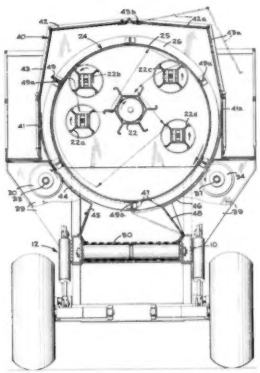
An adjustable brassiere incorporating a halter including a back, sides and straps and separate cups adapted to be releasably attached to one another and to the sides and straps of the halter. The back and sides of the halter or portions thereof may be fully or partially elasticized and may be provided with mid-back or side fastening means. The cups are formed in a variety of sizes, shapes and styles to permit the wearer to modify the under-garment to match her individual contours and aesthetic tastes. If desired, the halter, with or without the straps, may be incorporated as an integral part of other wearing apparel.

3,826,267

LEGUME HARVESTER WITH WIPED SIDE PANELS

Frank F. Scribner, Hoopeston, Ill., assignor to FMC Corporation, San Jose, Calif.

Filed Feb. 7, 1973, Ser. No. 330,333
Int. Cl. A01d
U.S. Cl. 130—30 H 6 Claims

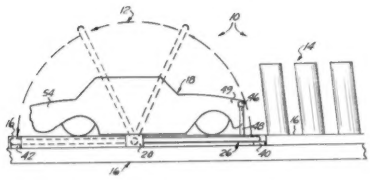


A field harvester for legumes such as peas, beans or the like includes a rotating drum screen containing beaters with a forwardly running crop conveyor beneath the screen. A shroud surrounds the upper portion of the drum screen and has depending side panels for directing shelled crop downwardly to the crop conveyor. The depending side panels are curved to conform to the drum screen and the screen has an external wiper that dislodges crop from a first curved side panel and sweeps it down to the crop conveyor. The wiper sweeps crop up from the opposite curved side panel, carries it up and around to the first curved side panel, and sweeps it down to the crop conveyor. The lower, crop delivery edge of the first side panel runs diagonally above the crop conveyor.

3,826,268
ENVELOPE FOR TOBACCO GOODS
Ernst-Rolf Detert, Lubbecke, Westfalen, and Wilhelm Ruchholz, Obermehnen, both of Germany, assignors to Eduard Gerlach, GmbH Chemische Fabrik, Lubbecke, Germany
Division of Ser. No. 83,658, Oct. 23, 1970, abandoned. This application Jan. 22, 1973, Ser. No. 325,724
Claims priority, application Germany, Feb. 21, 1970, 2008150
Int. Cl. A24b 3/14
U.S. Cl. 131—140 C 9 Claims

An improved cigarette envelope comprising a mixture of highly methylated methyl cellulose, acetyl cellulose, a filler agent, and a softener agent. According to the preferred process described in the disclosure, the mixture is prepared by using the above mentioned materials in a suspension wherein the solvent is a mixture of methylene chloride and methanol and in which the acetyl to methyl cellulose is in the ratio of 4:1 to 20:1 and the suspension is dried by gradually increasing the temperature in at least three zones.

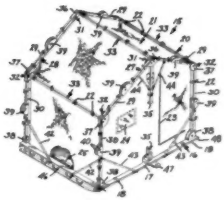
3,826,269
VEHICLE WASHING APPARATUS
Harry F. Garrison, 7470 Gerald, Warren, Mich. 48192
Filed Aug. 11, 1972, Ser. No. 279,975
Int. Cl. B08b 3/02; B60s 3/04
U.S. Cl. 134—123 1 Claim



A limit switch closed by a vehicle activates an inverted U-shaped conduit with nozzles on the inner side thereof and pivotally mounted on its free ends to swing from the slightly below floor level forward of the vehicle to a slightly below floor-level position behind the vehicle. At the same time, a spray of wash water and detergent under pressure is ejected from the nozzles. The conduit then swings back to its forward position while emitting a water spray under pressure from its nozzles for washing off the detergent and water solution emitted during its rearward swing. Another limit switch shuts off the water flow as the vehicle then moves forward and passes between longitudinally spaced upright slotted ducts emitting a pressurized flow of drying air.

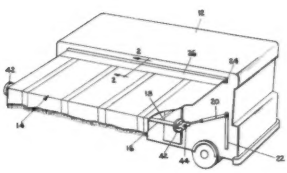
3,826,270
COLLAPSIBLE ICE FISHING HOUSE
Howard N. Hentges, 11873 Radisson Rd., Blaine, Minn. 55434
Filed Feb. 14, 1973, Ser. No. 332,269
Int. Cl. E04b 1/347
U.S. Cl. 135—4 R 9 Claims

A sectioned floor structure supports a collapsible frame and a flexible enclosure is suspended from the collapsible frame within the confines thereof. The sectioned floor structure and collapsible frame are foldable from an erect operative position wherein the floor structure is in a horizontal planar position to a storage-transport position wherein wing sections of the sectioned floor structure are disposed in parallel vertical planes perpendicular to a center section of the floor structure with the collapsible frame and flexible enclosure stored therebetween. Skid runners are secured to the floor structure



to support the floor structure in the horizontal planar position thereof or in the storage-transport position thereof.

3,826,271
AWNING CONSTRUCTION
James L. Sattler, Big Rapids, Mich., and David P. Phillips, Lookout Mountain, Tenn., assignors to Wildwood Products, Inc., Lookout Mountain, Tenn.
Filed May 24, 1972, Ser. No. 256,434
Int. Cl. E04f 10/00
U.S. Cl. 135—5 AT 10 Claims

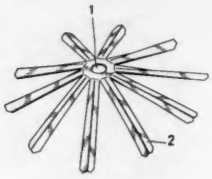


An awning construction for use in travel vehicles and the like in which a fabric member serves as the major portion of the awning and a flexible and pliable cover member, preferably of a thermoplastic sheet material, is joined to the inner edge of the fabric so that the cover member serves as a portion of the awning during normal use and serves as an outer cover for the fabric portion when the same is rolled up for storage and travel. The cover member is easily cleanable and of a different material than the fabric member so that the fabric member is protected from dirt when it is rolled up. Desirably, end plates are provided on a frame adjacent to the outer end of the fabric member for closing the ends of the cover when the fabric member is rolled up.

3,826,272
CLOTH-PROTECTOR FOR FOLDING UMBRELLA
Toshio Okuda, Daito, Japan, assignor to Hashimotoso Kabushiki Kaisha, Osaka, Japan
Filed Nov. 9, 1972, Ser. No. 305,066
Claims priority, application Japan, Nov. 22, 1971, 46-109696
Int. Cl. A45b 19/06
U.S. Cl. 135—20 R 3 Claims

Striplike fabric supports made of a flexible elastic material

and secured to the stick of a telescopically collapsible umbrella extend along umbrella ribs respectively to prevent the umbrella fabric from being caught between folded ribs when the umbrella is collapsed.

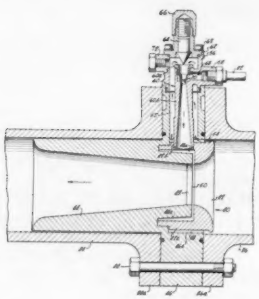


3,826,273

PRESSURE LOSS COMPENSATOR

Albert William Brown, Newport Beach, Calif., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Mar. 26, 1973, Ser. No. 344,708
Int. Cl. F16k *31/12*
U.S. Cl. 137—1 **22 Claims**



A main venturi creating a small pressure drop in its throat is positioned in a high pressure fuel line for fueling aircraft. A small amplifying venturi with means for adjusting the flow therethrough is positioned with its input connected to the line pressure while its outlet is in communication with the throat of the main venturi. The throat of the adjustable venturi is connected to a regulator at a fueling station controlling the fuel line pressure, the amplifying venturi is selected and adjusted to compensate for a pressure drop in the fuel line downstream of the main venturi.

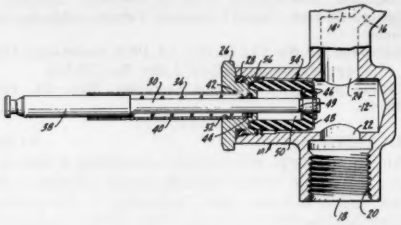
3,826,274

SHOWER-TUB DIVERTER VALVE

Alfred M. Moen, 25 Lakeview Dr., Grafton, Ohio 44044

Filed Mar. 26, 1973, Ser. No. 344,507
Int. Cl. F16k *31/44, 51/00*
U.S. Cl. 137—119 **11 Claims**

A shower-tub diverter member is spring-biased to a position to maintain communication between the water inlet and the tub outlet. The diverter is formed of a distortable flexible material and is generally cup-shaped. When the diverter is in a position to block water access to the tub outlet, water pressure distorts the cup-shaped diverter into the tub outlet to provide a seal. A reduced portion of the diverter extends into the tub outlet to assist in resisting return of the diverter member to its normally open position.

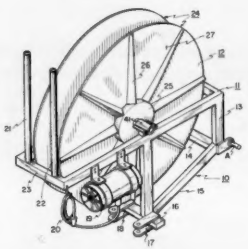


3,826,275

HOSE REEL CONSTRUCTION

Burr Courtright, La Grande, Oreg., assignor to CH O, Inc., La Grande, Oreg.

Filed Sept. 18, 1972, Ser. No. 290,099
Int. Cl. B65h *75/36*
U.S. Cl. 137—355.2 **9 Claims**



A hose reel device constructed for winding and unwinding fluid carrying hoses such as agricultural, irrigation water supply hoses. The subject reel, in a preferred form of the invention, is constructed for attaching to the conventional three-point hitch connections of a conventional farm tractor. The reel includes hub structure suitable for receiving a journal shaft to which a main gear is affixed. Orbital motor means drives the main gear in either of two directions, for winding and unwinding functions. In a modification of the equipment a water-fluid exhaust unit such as a blower or water pump is attached to the frame and has the useful purpose of exhausting water from a hose lying on the terrain preparatory to the hose being wound upon the reel. A clutch and gear combination, structurally related to the revolving reel proper, is constructed so that the reel may be not only driven in either of two directions and also conditioned for free-spooling, as desired. Adjustable stand structure and towing bracket means are optional but usable features.

3,826,276

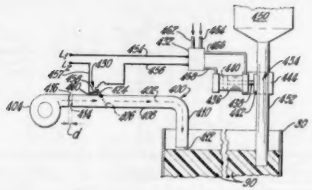
LEVEL SENSING APPARATUS

James H. Sears, Anderson, and Bernard H. Jones, Pendleton, both of S.C., assignors to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed Dec. 22, 1971, Ser. No. 210,872
Int. Cl. F16k *31/02*
U.S. Cl. 137—389 **2 Claims**

Apparatus for controlling the level of a body of flowable material including a passageway for flow of gas to the level of

the body, means for supplying a gas to the passageway, means for sensing the flow of gas in the passageway as an indication



of the level and means effective in response to the sensed flow of gas controlling supply of material to the body to maintain a selected level.

3,826,277

VENT VALVE WITH PILOT VALVE FOR OIL-TANKER STORAGE TANKS

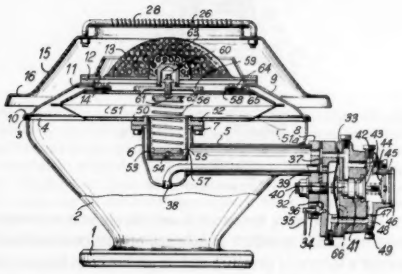
Louis Marius Jean Bois, Lotissement des Charmes, Norges-la-Ville (Cote-d'Or), France

Filed Oct. 27, 1972, Ser. No. 301,296

Claims priority, application France, Nov. 2, 1971, 72.39159; Apr. 20, 1972, 72.13930

Int. Cl. F16k *17/196*

U.S. Cl. 137—493 **4 Claims**



A vent valve having a pilot-valve, for oil-tanker storage tanks, comprises a flared casing offering maximum flow section when the associated obturator member is in the open position, within the casing and beneath a seat terminating the same, the seat having a diameter at least equal to that of the inlet conduit of the casing and being surmounted by a flame-guard and a discharge nozzle both of which are external to the casing. The vent valve may comprise a main expandable valve with a rigid inner end-surface which is profiled by an outwardly directed border the end section of which is fixedly restrained level with the widest part of the casing and is joined by a deformable, flexible and annular wall to a movable upper or outer end-surface having a central profiled extension, which end-surface is provided with a lining which forms a seal upon contacting the sealing seat.

3,826,278

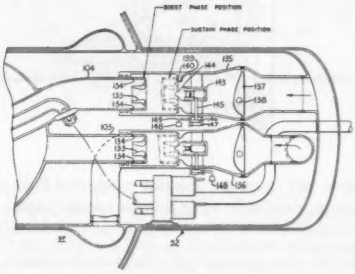
MISSILE AND POWERPLANT

Joseph J. Lovingham, 72 Wayne Blvd., Madison, N.J. 07940, and Hartmann J. Kircher, III, 137 Springbrook Trl., Sparta, N.J. 07871

Division of Ser. No. 502,221, Oct. 22, 1965, abandoned, which is a division of Ser. No. 247,443, Dec. 18, 1962, Pat. No. 3,482,404. This application Mar. 3, 1967, Ser. No. 622,879

Int. Cl. F17b *1/12*

U.S. Cl. 137—599 **4 Claims**



A valve for controlling fluid flow through a conduit and having means to reduce flow therethrough upon sliding operation of the valve.

3,826,279

OIL/WATER PIPELINE INLET WITH MEANS FOR PRODUCING A UNIFORM OIL VELOCITY

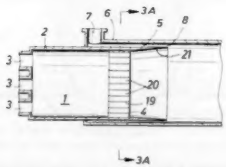
Eke Verschuur, Amsterdam, Netherlands, assignor to Shell Oil Company, Houston, Tex.

Filed Jan. 13, 1972, Ser. No. 217,496

Claims priority, application Netherlands, Apr. 29, 1971, 7105973

Int. Cl. F17d *1/16*

U.S. Cl. 137—604 **2 Claims**

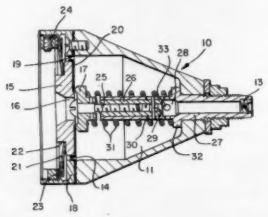


An inlet piece for a pipeline for the transport of a viscous liquid surrounded by an annular layer of a liquid with a lower viscosity, which liquids are entirely or substantially insoluble with respect to each other, composed of a central channel, provided with at least one inlet and with an exit for the viscous liquid, a chamber surrounding that central channel, provided with at least one inlet for the liquid with a lower viscosity and with an annular outlet for that liquid which is so positioned as to surround the exit for the viscous liquid, and a rotation-symmetrical connecting piece for the connection to the pipeline; and a process for the transport of those liquids through a pipeline.

3,826,280
QUICK-ACTING, SELF-RESETTING FLUID PRESSURE RELEASE VALVE ASSEMBLY

Roscoe E. Perham, Lebanon, N.H., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 16, 1973, Ser. No. 333,438
Int. Cl. F17d *3/00*
U.S. Cl. 137—624.14 **8 Claims**

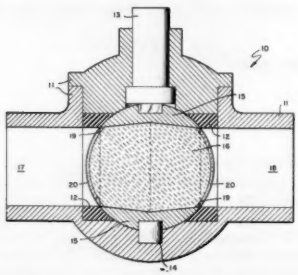


A valve that stores and releases pressurized fluid periodically and automatically using just the energy present within the fluid. A Belleville spring is employed in combination with a poppet valve arrangement to snap the valve open and to reclose the valve automatically. Build-up of pressure within the storage chamber of the valve assembly moves the valve against the compression of the Belleville spring until that point is reached wherein the spring snaps through carrying the valve to its full open position releasng the pressurized contents.

3,826,281
THROTTLING BALL VALVE

Edward C. Clark, Cheverly, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 29, 1969, Ser. No. 872,265
Int. Cl. E03b
U.S. Cl. 137—625.31 **4 Claims**



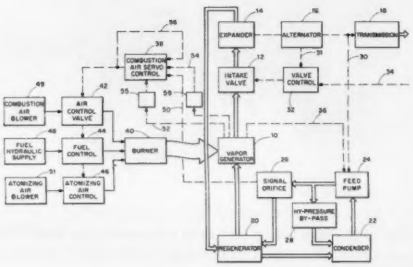
A ball valve having a ball with a porous core which acts as a filter and a noise reduction element, allowing use of the valve as a throttling valve as well as a shut-off valve.

3,826,282
EXTERNAL COMBUSTION ENGINE AND CONTROL MECHANISM THEREFOR

William B. Noe, Concord, Mass., assignor to Thermo Electron Corporation, Waltham, Mass.

Filed May 5, 1972, Ser. No. 250,638
Int. Cl. F16k *11/07, 39/04*
U.S. Cl. 137—625.69 **4 Claims**

An external combustion engine, such as the vapor cycle engine, produces power by the expansion of a working fluid vapor. A vapor generator vaporizes a suitable working fluid which is fed to an expander. The vaporized working fluid expands and is subsequently fed back to the vapor generator. A burner provides energy for the vapor generator. The fuel and air supply for the burner is controlled by a system responsive to operating conditions of the engine. That is, the power input

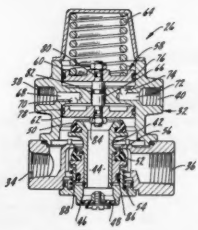


to the vapor generator is correlated by a control system with the demand on the engine. The control system disclosed involves a servomechanism which may suitably respond, for example, to either the working fluid flow rate or the input from an accelerator which commands a change in the working fluid flow rate.

3,826,283
INVERSION VALVE

Boleslaw Klimek, Des Plaines, Ill., assignor to The Berg Manufacturing Company, Des Plaines, Ill.

Filed May 29, 1973, Ser. No. 364,307
Int. Cl. F16k *31/12*; **B60t** *13/68*
U.S. Cl. 137—627.5 **11 Claims**



An inversion valve for use in a vehicle air brake system includes a valve member which maintains communication between a source of pressure and an air brake as long as pressure is maintained in both primary and secondary air systems. If the primary air system should suffer a reduction in pressure, the valve member closes communication between the tank and the air brake and opens an exhaust port to exhaust the air pressure in the brake, thereby causing the brake to operate.

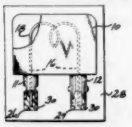
3,826,284
TUBULAR FLUIDIC RESISTOR

David C. Broker, and Judith L. Wisniewski, both of Milwaukee, Wis., assignors to Johnson Service Company, Milwaukee, Wis.

Division of Ser. No. 41,814, June 1, 1970. This application June 26, 1972, Ser. No. 266,247
Int. Cl. F15c *1/06*
U.S. Cl. 137—833 **1 Claim**

A capillary linear fluidic resistor is formed by molding a plastic about a close tolerance wire to define a particular length-to-diameter ratio. The wire is shaped to the desired

capillary passageway and supported in a mold with walls of the mold engaging the wire at the opposite ends of the capillary passageway. Thus, the wire is a close tolerance member having a given constant diameter. A thermoplastic fills the mold and after curing, the molded member with the wire therein is removed. The wire is pulled from the plastic member to form the capillary resistor.

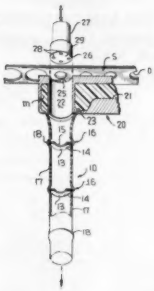


3,826,285

HOLLOW TUBE OF VARIABLE EXTERIOR DIMENSIONS

Frank J. Reynolds, 1616 Van Buren Dr., North Brunswick, N.J. 08902

Filed Oct. 24, 1972, Ser. No. 300,147
Int. Cl. F16l 9/12
U.S. Cl. 138—103 **13 Claims**



This invention relates to an article of manufacture and more particularly a hollow extruded tube of variable exterior dimensions formed of preheated, drawn down and thereafter cooled thermoplastic material having a plurality of elements internally interlocked therewith in spaced relationship to each other whereby in outward appearance the tube may be best described as "facsimile" bamboo and is adapted for use as a percussion instrument, the game of tinikling, fishing pole sections, structural elements, etc.

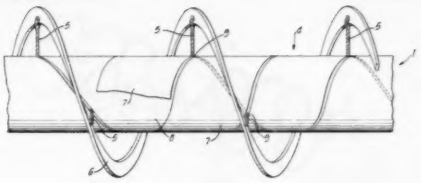
3,826,286

SPACER CONSTRUCTION FOR THERMALLY INSULATING CONCENTRIC TUBES

August Beck, Langenhagen, Germany, assignor to Kabel-und Metallwerke Gutehoffnungshutte/Aktiengesellschaft, Hannover, Germany

Filed Feb. 28, 1973, Ser. No. 336,421
Int. Cl. F16l 7/00
U.S. Cl. 138—114 **9 Claims**

In a coaxial tube system for low temperature use, such as an envelope for cryogenic cable or as conduit for low temperature fluids, the system having a first, inner tube and a second, outer tube concentric to the inner tube, there being a ring space in-between, a spacer and supporting structure in the ring space, comprising a plurality of layers on the inner tube in concentric relation thereto and to each other and in superimposed relation; each layer includes at least one highly reflective foil ribbon and of at least one supporting ribbon of like width and helically wound on the respective layer underneath on the inner tube, and in sequential loops leaving a narrow gap between adjacent loops; sequential layers have their respective ribbons wound at opposite pitch and sense of direction of winding; the ribbon helices of every other layer are superimposed and the gaps of every other layer are radially aligned so that the gaps of immediately adjacent layers intersect, resulting in a plurality of gap intersections arranged along at least two helices around the inner tube; a plurality of flexible members such as filaments, ropes, string, etc., respectively traverse the gap intersections, for holding the inner tube underneath said radially aligned gap intersections; and means, such as a helical carrier hold the said flexible means adjacent the outer tube for suspending the inner tube therein.

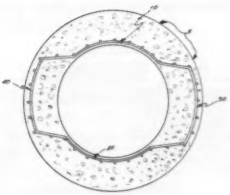


3,826,287

CONCRETE PIPE REINFORCING CAGE

Wilbur E. Tolliver, Holland, Mich., assignor to New York Wire Mills, Tonawanda, N.Y.

Filed Feb. 8, 1973, Ser. No. 330,608
Int. Cl. F16l 9/08
U.S. Cl. 138—175 **13 Claims**

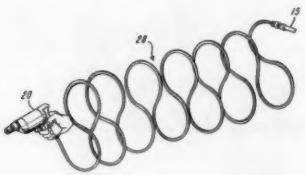


A cage for reinforcing concrete pipe made by positioning two reinforcing fabric segments at the crown and invert reinforcing portions of the cage respectively and two fabric segments at the opposed spring line reinforcing segments of the cage respectively. Each of the segments if formed on a generally circular radius, the crown and invert reinforcing segments being formed on an inner radius so as to be located generally near the inner wall of the completed pipe and the spring line reinforcing segments being formed on a larger radius so as to be generally adjacent the outer wall of the pipe. In one embodiment, the four segments are joined together by two spaced hoops, the crown and invert reinforcing segments being joined directly to the hoops and the spring line reinforcing segments being joined to the hoops by spacer rods. In another embodiment, the four segments are part of an integral piece of reinforcing fabric bent outwardly at the edges of the crown and invert reinforcing segments to define spacer segments, the spacer segments terminating and being bent inwardly at the edges of the spring line reinforcing segments.

3,826,288
SELF-RECOILING HOSE

Jerry W. Cooper, Waynesville, and John S. Haley, Lake Junaluska, both of N.C., assignors to Dayco Corporation, Dayton, Ohio

Filed Apr. 20, 1973, Ser. No. 353,054
Int. Cl. F16l 9/12, 11/04
U.S. Cl. 138—178 9 Claims

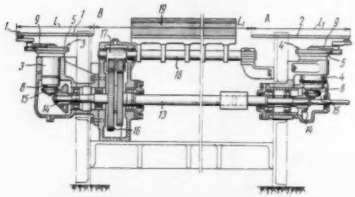


A self-recoiling hose having a plurality of integral convolutions wherein said convolutions with the hose in a coiled condition are arranged in a corresponding plurality of parallel planes and each convolution has a peripheral outline which is substantially noncircular.

3,826,289
METHOD FOR INSERTING WEFT IN SHUTTLELESS LOOMS

Pavel Vladimirovich Galkin, ul. 1 proezd, 1a, and Nikolai Antonovich Rudenko, ul. Lesnaya, 4, kv. 10, both of Klimovsk, U.S.S.R.

Filed Aug. 25, 1972, Ser. No. 283,757
Claims priority, application U.S.S.R., Dec. 15, 1971, 1724106
Int. Cl. D03d 47/18
U.S. Cl. 139—127 R 3 Claims

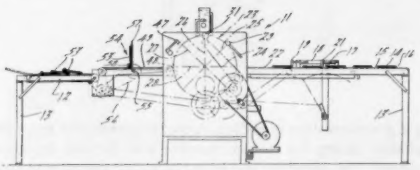


A method for laying weft thread in the warp shed used in needle looms is disclosed. This method consists in that the feeding and the receiving laying needles mutually reciprocate to transfer the weft thread at the moment of their closest approach. The needles meet at the midpoint of the distance between the starting points of their reciprocating movement for which purpose the needles are made different in length. The shorter needle is introduced into the warp shed with a time lag relative to the moment of inserting the longer needle thereinto, thus making the needles move in one direction while the weft thread is transferred, whereupon the needles return to their initial positions leaving the warp shed at the same time. At the expense of extending the time of contact of the needles during their movement in one direction, this method permits of significantly improving the conditions for catching the weft and sharply reducing the number of mispicks, loops, and double threads.

3,826,290
COIL BINDING MACHINE

Ernst Pfaffle, Neuffen, Germany, assignor to Hans Sickinger Company, Pontiac, Mich.

Filed Mar. 8, 1973, Ser. No. 339,125
Int. Cl. B21f 11/00, 15/00
U.S. Cl. 140—92.7 6 Claims

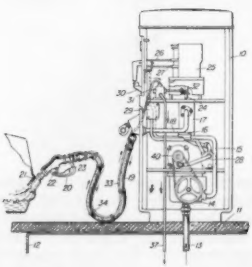


Stacks of sheets are fed to a rotary carrier indexable to successive stations where the sheets are aligned and spiral bound. The binding takes place at two separate stations, the coil being inserted and severed from the feed wire at one station with an axially moving shear and the ends trimmed and turned inward at the succeeding station. After leaving the carrier, alternate books are flipped over by a continuously rotating set of fingers and stops.

3,826,291
DISPENSING VOLATILE HYDROCARBON FUELS

Lester R. Steffens, Darien, Conn., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 11, 1972, Ser. No. 313,721
Int. Cl. B65b 31/00
U.S. Cl. 141—59 1 Claim



Escape of hydrocarbons to the atmosphere during dispensing of volatile hydrocarbon fuels is avoided by pumping vapor from the container to be filled concurrently with introduction to that container of hydrocarbon fuels which contain volatile components. Suitable apparatus for the purpose include a vapor pump driven by the shaft of the meter which operates an indicater of amount of liquid dispensed.

3,826,292
APPARATUS FOR INTRODUCING A FILLING MATERIAL INTO A CONTAINER OF FLEXIBLE MATERIAL

Flemming Lerche-Svendsen, No. 11 Skovholmvej, 2920 Charlottenlund, Denmark

Filed Aug. 14, 1972, Ser. No. 280,243
Claims priority, application Denmark, Aug. 31, 1971, 4265/71
Int. Cl. B65b 3/16
U.S. Cl. 141—114 23 Claims

A container of flexible material and a method of filling the container with a bulk material is described. A filling hose is

secured to the opposed internal walls of the flattened or collapsed container in bonding zones or areas in which the bonding strength is greater than the ultimate strength of the hose in the zones intermediate the bonding zones. When the filling material is introduced into the container through the hose, the discharge aperture of which is spaced from the closed end of the container, the container will be gradually expanded or

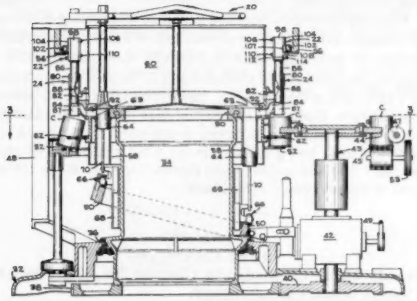
distended and thus exert tensile forces in the intermediate zones of the hose. Since the hose material in these zones is weaker than the bonding strength between the hose and the container, the hose will be gradually torn longitudinally into two parts each of which participates in the distention of the container so that the location at which the filling material passes from the hose into the container will be displaced away from the closed container end in timed relationship with the filling operation.

3,826,293

NO CAN-NO FILL FOR HIGH SPEED ROTARY FILLING MACHINE

David W. Cayton, Cupertino, Calif., assignor to FMC Corporation, San Jose, Calif.

Filed Apr. 16, 1973, Ser. No. 351,417
Int. Cl. B65b *57/02*
U.S. Cl. 141—142 **13 Claims**



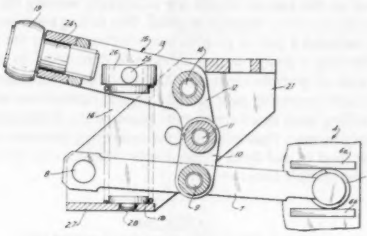
A high speed rotary filling machine is provided with means for sensing incoming empty containers before they are moved onto the turret of the filling machine. Each valve of the filling machine is provided with a movable cam follower and a latch for either arming the follower to open the valve, or disarming the follower to keep the valve closed, according to the presence or absence of an incoming empty container approaching the turret for subsequent alignment with that valve. Arming the follower is effected by a fixed cam lying in the path of the followers, and disarming the follower is effected by a power actuated cam adjacent the same path. Each filling valve, accordingly, is normally opened during the filling operation unless it has been previously disarmed.

3,826,294

MECHANISM FOR MOVING CENTERING MEMBERS FOR CONTAINERS IN CONTAINER FILLING MACHINES

Friedrich Rademacher, Kamen-Sudkamen, Germany, assignor to Holstein & Kappert Maschinenfabrik, Dortmund, Germany

Filed Jan. 28, 1972, Ser. No. 221,544
Claims priority, application Germany, Jan. 28, 1971, 2103983
Int. Cl. B67c *3/34*
U.S. Cl. 141—258 **10 Claims**



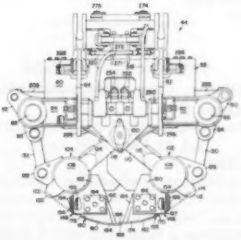
A machine for filling containers with liquids has a vessel which rotates about a vertical axis and carries an annulus of downwardly extending filling devices each of which guides a reciprocable centering and sealing member for a container which is held in register with the respective filling device during introduction of a liquid. The mechanism for moving the centering member toward and from sealing engagement with a container below the respective filling device employs a one-armed lever which is pivoted to the vessel and is articulately connected with the centering member, a link which is connected to an intermediate portion of the lever, a bell crank which is pivotably mounted on the vessel and has a first arm coupled to the link and a second arm provided with a follower, a stationary cam which is tracked by the follower, and a helical spring which reacts against the vessel and biases the follower against the cam. When the cam allows the spring to expand, the centering member descends into sealing and centering engagement with a container.

3,826,295

FELLING HEAD STRUCTURE

Earl C. Johnson, Bellevue, and Stanley Robert Hiseler, Dubuque, both of Iowa, assignors to Deere & Company, Moline, Ill.

Filed Apr. 26, 1973, Ser. No. 354,480
Int. Cl. A01g *23/08*
U.S. Cl. 144—34 E **18 Claims**



An articulated, four-wheel drive tree harvesting machine includes a front frame section upon which a felling boom assembly, a delimbing assembly and a feed assembly are mounted. The felling boom assembly is operable for severing a

tree and lowering the same into a generally horizontal disposition from where the trunk of the tree may be released for engagement by feed rolls of the feed assembly and for encirclement by blades of the delimbing assembly. The felling boom assembly includes a felling head structure which is pivotally mounted at the end of a boom section for movement about a horizontal axis and which includes a pair of cylindrically curved blades mounted for vertical swinging movement about an axis arranged to extend crosswise to the longitudinal axis of a tree being sheared. A pair of double-acting pistons are mounted within a common cylinder and are respectively linked to the pair of blades for selectively moving the latter towards and away from each other. The felling head structure also includes a pair of grapple tongs located above the pair of blades and a double-acting cylinder is connected to each of the pair of grapple tongs and are operable independently of the blade-operating pistons. The pivotal connection between the felling head structure and the boom of the felling boom assembly forms a fluid manifold for conveying pressure and exhaust fluid to and from the hydraulic actuators for the blades and the grapple tongs.

3,826,296

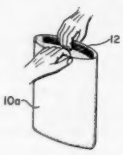
SELF-LINING HANDBAG OR THE LIKE

Myrtle Ellen Morris, 8564 Freyman Dr., No. 110, Chevy Chase, Md. 20015

Filed Mar. 8, 1972, Ser. No. 232,789

Int. Cl. B63d

U.S. Cl. 150—3 **2 Claims**



A self-lining receptacle such as a handbag or the like is provided which includes a pair of closure strips or tapes which are secured to opposite inner surfaces of the bag and which provide closure of the bag when pressed together. The bag is manufactured by folding a blank of material to which the strips have been secured, lengthwise along the longitudinal centerline thereof so the unfinished side is exposed. Adjacent edges at one end, and the side opposite the fold, are sewn together after which the folded blank is turned inside out through the open end. This end is then sewn closed and is inserted back into the pocket formed by the other end, one half being tucked into the other half so that the finished surface of this half forms a lining and that the strips are located on the lining opposite one another, adjacent the opening at the top produced by this step.

3,826,297

RADIAL TIRE CARCASS

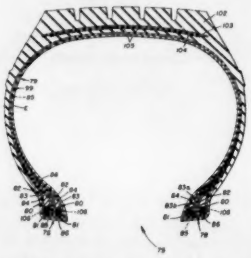
Sterling W. Alderfer, Akron, Ohio, assignor to The Steelastic Company, Akron, Ohio

Filed Oct. 26, 1972, Ser. No. 301,189

Int. Cl. B60c *9/08, 15/06*

U.S. Cl. 152—354 **10 Claims**

The radial tire carcass disclosed has a pair of bead sections and at least one reinforced body ply functionally gripped thereby. Each bead section incorporates one or more bead assemblies comprising a bead ring and a reinforced radially oriented flipper portion anchored to the bead ring. The flipper portion overlies the body ply in contiguous juxtaposition, and the reinforcing means in the body ply terminates along the radial extent of the bead assembly. Because the reinforcing means in the flippers are wholly independent of the reinforcing means in the body ply, the transfer of forces therebetween is occasioned solely by virtue of the aforesaid contiguous juxtaposition. The method and apparatus for making such a tire assembles a first pair of bead assemblies on a building drum and then builds a first body ply by successively depositing a plurality of reinforced elastomeric strips about the outer surface of the building drum. The deposited strips are stitched to each other and to the bead assemblies. The relationship of the



successive strips with respect to each other is predetermined by coordination of the degree of angular displacement through which the drum means is indexed to receive the successive deposits of strips thereon in conjunction with the width of the successive strips. Additional bead assemblies and body plies as well as chafer strips, belts, sidewall stock and tread stock may be applied, if desired.

3,826,298

POLYVINYL ALCOHOL CORD TIRES

Shoichi Tanaka, 550-1, Yasue; Susumu Kousaka, 1273-4, Nakasho, both of Kurashiki, and Toshio Kimura, 2-208, Katsuragi-cho, Nara, all of Japan

Continuation-in-part of Ser. No. 90,816, Nov. 10, 1970. This application Jan. 5, 1972, Ser. No. 215,621

Claims priority, application Japan, Nov. 25, 1969, 44-94790; Apr. 30, 1970, 45-37354

Int. Cl. D02g *3/48, 3/02*

U.S. Cl. 152—359 **3 Claims**

Polyvinyl alcohol fibers are provided containing boric acid or a borate salt thereof in an amount of 0.2 to 0.9 percent by weight of polyvinyl alcohol wherein the yarn tenacity of 120°C., the yarn initial modulus at 120°C. and the yarn creep at 135°C. are at least 7.5 g/d, 100 g/d and less than 2 percent, respectively. Radialply and belted bias ply tires are also provided which utilize said fibers in the cord of the breaker or belt, the fiber being twisted under a twist constant of ply of 800 to 1,300 and a cable twist (turns/10cm) of 80 to 100 percent of the ply twist (turns/10cm).

3,826,299

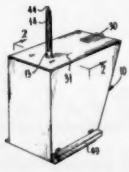
TYRE CHANGERS

Donald Butler Curchod, 150 Cabarita Rd., Clareville, New South Wales, Australia (2107)

Filed Sept. 8, 1972, Ser. No. 287,351

Int. Cl. B60c *25/10*

U.S. Cl. 157—1.24 **8 Claims**



A tyre changer and bead breaker having a cylinder actuated threaded shaft which when displaced urges a bead breaker

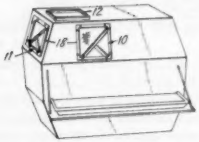
holder against a tyre on a wheel positioned in the path of travel of the bead breaker to separate the bead from the rim, the tyre thereafter being positioned coaxially with respect to the shaft, and a tyre lever which when mounted on the shaft, is rotated upon displacement of the shaft whereby portion of the lever inserted between the wheel and the tyre removes the tyre from the wheel.

3,826,300

LIGHT SEAL FOR HAND OPENINGS IN PHOTOGRAPHIC PROCESSING EQUIPMENT

Conrad E. Lee, Mound, Minn., assignor to Pako Corporation, Minneapolis, Minn.

Filed Feb. 7, 1973, Ser. No. 330,179
Int. Cl. G03d *17/00*
U.S. Cl. 95—1 R **1 Claim**



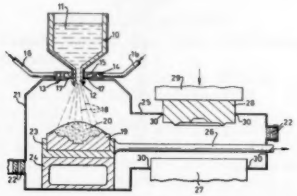
This is a light seal for sealing hand access openings for photographic processing equipment and specifically includes four triangular panels made from elastic material respectively arranged 90° out of phase around a square opening with the free marginal edge portions thereof having a substantial light sealing overlap provided with an elastic reinforcement and constitutes an improvement over the light seal disclosed in the U.S. Pat. to Grant, No. 3,314,352.

3,826,301

METHOD AND APPARATUS FOR MANUFACTURING PRECISION ARTICLES FROM MOLTEN ARTICLES

Reginald Gwyn Brooks, Mirfield 1, Sketty Park Rd., Sketty Green, Swansea, Glamorgan, Wales

Filed Oct. 16, 1972, Ser. No. 297,866
Claims priority, application Great Britain, Oct. 26, 1971, 49646/71; June 6, 1972, 26307/72
Int. Cl. B22d *11/10*
U.S. Cl. 164—46 **35 Claims**



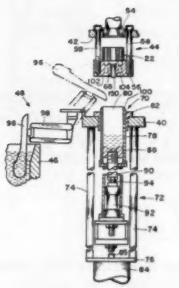
A method and apparatus for manufacturing shaped precision articles from molten metals (including alloys), which articles may either be effectively non-porous or have a controlled degree of porosity and may be finished (i.e. no further processing is required) or may require a small amount of finish machining (e.g. trimming of flash and/or heat treatment), wherein the method comprises directing a stream of molten metal or molten metal alloy at a collecting surface to form a deposit, and working the deposit by means of a die to form a precision metal or metal alloy article.

3,826,302

DIE CASTING APPARATUS

William G. Wunder, Hamilton, Mich., assignor to Prince Corporation, Holland, Mich.

Filed Oct. 3, 1972, Ser. No. 294,523
Int. Cl. B22d *17/12*
U.S. Cl. 164—312 **6 Claims**



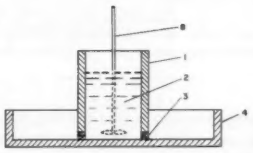
Apparatus for automatically casting articles and particularly the end rings and conductor bars in a rotor. A mold having interconnected ends adapted to receive the body of the product into which the liquid material to be cast is injected, can be clamped, is movably seated over a chamber, reservoir or shot sleeve for the injectable material. By movement of either the mold, the reservoir or both, the mold and chamber can be separated sufficiently to permit free access to the reservoir for introduction of a charge of the liquid injectable material. In a more automated phase of the invention, a single injection station is provided with a plurality of molds movable between the injection station and other stations at which the mold is opened, sprue removed, finished product removed and the mold prepared for the next casting cycle.

3,826,303

APPARATUS FOR CASTING MOLTEN METAL/FOAMING AGENT COMPOSITION

Chester P. Jarema, Detroit, and Leonard M. Niebylski, Birmingham, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 50,139, June 26, 1970, abandoned. This application Apr. 24, 1972, Ser. No. 247,040
Int. Cl. B22d *41/00*
U.S. Cl. 164—335 **2 Claims**



A novel vessel and an improved method of casting batch liquid materials which solidify on cooling or standing utilizing one or more upright open-ended body elements with mixing means therein initially seated on the bottom of a mold; the method is especially advantageous for casting foamed metals.

3,826,304

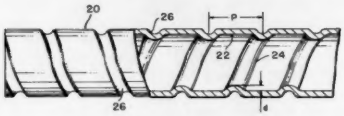
ADVANTAGEOUS CONFIGURATION OF TUBING FOR INTERNAL BOILING

James G. Withers, Jr.; Harvey R. Dean, both of Dearborn, Mich., and Stuart T. Ross, Manlius, N.Y., assignors to Universal Oil Products Company, Des Plaines, Ill.

Continuation of Ser. No. 674,611, Oct. 11, 1967, abandoned. This application Nov. 4, 1970, Ser. No. 86,708

Int. Cl. F28f *1/08*

U.S. Cl. 165—1 26 Claims



Tubing designed for internal boiling, particularly of substituted hydrocarbon refrigerants provided with an unobstructed interior having radially inwardly extending ribbing comprising a multiplicity of convolutions extending around the tubing, the axial pitch P of adjacent convolutions being not greater than 3/4 inch, the depth *d* of the ribbing being between 1/64 inch and 3/64 inch, the ratio P/*d* being between 5 and 25.

3,826,305

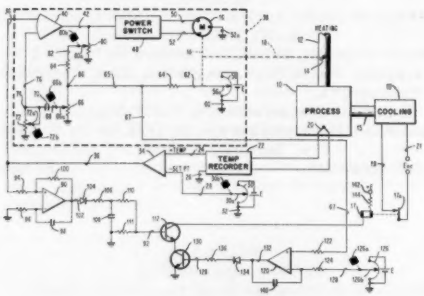
TEMPERATURE CONTROLLER FOR CONTROLLING BOTH HEATING AND COOLING

Walter Fishman, Hatfield, Pa., assignor to Leeds & Northrup Company, North Wales, Pa.

Filed Jan. 10, 1973, Ser. No. 322,325

Int. Cl. F25b *29/00*

U.S. Cl. 165—26 7 Claims



A temperature controller for maintaining the temperature of a process at a set point by controlling the heating input in accordance with both a proportional and reset response from the temperature deviation. When the deviation indicates that the temperature control requires a cooling input to the process, a gating signal is produced. Another gating signal is produced when the manipulated variable providing the heating input is below a preset value. Gating means are provided which will respond to the coincidence of the two gating signals for introducing the cooling to the process. The cooling is thus controlled in an on-off mode.

3,826,306

APPARATUS HAVING ONE OR MORE ROTATABLY DRIVEN COMPONENTS

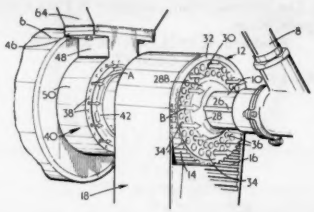
Charles Richard Marsh, Romiley, near Stockport, England, assignor to Auto-Masters Limited, Hyde, Cheshire, England

Filed Feb. 23, 1973, Ser. No. 335,281

Claims priority, application Great Britain, Feb. 23, 1972, 8267/72

Int. Cl. F24h *3/00*

U.S. Cl. 165—47 17 Claims



To prevent heat degradation of a rubber driving belt passing around a pulley keyed to a shaft of a heated roller, cooling air is blown onto a side of the pulley from a ring of jets extending around the shaft, and the pulley is formed with passages extending in rings around the shaft to permit the air to pass through the pulley.

3,826,307

WELL PACKER AND TESTING APPARATUS

Cicero C. Brown, and Chudleigh B. Cochran, both of Houston, Tex., assignors to Brown Oil Tools, Inc., Houston, Tex.

Filed Sept. 25, 1972, Ser. No. 292,136

Int. Cl. E21b *47/10*

U.S. Cl. 166—120 20 Claims

Apparatus for testing a well packer having a supporting body anchored to a surrounding well conduit and on which is carried a seal member for forming a fluidtight seal between the surrounding well conduit and the supporting packer body. The testing apparatus may comprise an inner well conduit concentrically disposed within the surrounding well conduit and to which is attached a tubular mandrel for disposition within the supporting packer body to form an annular flow passage in fluid communication with the annulus between the two well conduits. Annular pack-off means comprising a cylindrical sleeve member is carried by the mandrel for axial move-

ment from a first position above the annular passage to a second position sealingly engaging this flow passage and preventing flow of fluids from the annular passage through the annulus between the well conduits. The sleeve member may be mounted on the mandrel for limited axial movement relative thereto and may be initially prevented from axial movement relative to the mandrel by hold-down means. The hold-down means may be adapted to release the sleeve member in response to pressure applied to one end thereof so as to permit its limited axial movement relative to the mandrel. The hold-down means also includes cooperable friction means on the mandrel and the sleeve member responsive to pressure applied to the opposite end of the sleeve member to permit axial movement in one direction while restricting movement in the opposite direction.

3,826,308

PROCESS FOR PRODUCING PRODUCT FROM FOSSIL FUEL

Alicia L. Compere-Whitney, Knoxville, Tenn., assignor to Imperatrix, San Jose, Calif.

Filed Sept. 25, 1972, Ser. No. 291,572

Int. Cl. C12d *3/10*; **E21b** *43/22, 43/24*

U.S. Cl. 166—246 **12 Claims**

A process is disclosed for producing a valuable product from fossile fuel deposits which contain organic ring compounds. In the process, a fossil fuel deposit containing organic ring compounds is contacted in situ, preferably at a depth of at least 500 feet below ground surface, with an anerobic ring compound fermenting microorganism. An intermediate having a lower ring compound content and including paraffins and organic acids is produced. Generally, water is present during the fermenting and the intermediate is more soluble in the water than are the organic ring compounds. The intermediate is contacted either concurrently with the fermentation of the organic ring compounds or thereafter with a microorganism which converts paraffins to organic acids. The resulting organic acid composition is contacted with a microorganism which converts organic acids to valuable products. The conversion of the organic acids to valuable products can occur either concurrently with or after the microorganismic conversion of paraffins to organic acids. In a preferred embodiment of the invention a microorganism which converts carbohydrates, e.g., cellulose, to a valuable product is included in at least one of the contacting steps, most preferably during the ring compound fermenting.

3,826,309

WELL SAFETY VALVE

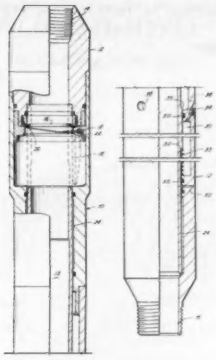
Gilbert H. Tausch, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Filed May 11, 1973, Ser. No. 359,254

Int. Cl. E21b *43/12*; **F16k** *17/02*

U.S. Cl. 166—224 S **3 Claims**

A well safety valve for use in a well tubing having a valve for engaging an annular valve seat for opening and closing the valve and operated by a sliding tube telescopically movable in the body and positioned below the valve means. Upward movement of the tube opens the valve and downward movement of the tube closes the valve. Means normally biasing said tube upwardly for holding the valve open and piston means connected to the tube and in communication with the exterior of the valve for moving the tube downwardly for closing the valve on increase in pressure exteriorly of the valve. A flapper valve pivotally connected to the body below the valve seat and movable upwardly into engagement with the seat for closing the valve and movable downwardly away from the seat for opening the valve. The biasing means including a gas chamber having a seal on each side of the chamber between the chamber and the interior of the tubing, and a bleed port leading from the side of each seal remote from the chamber to exteriorly of the body for preventing tubing pressure entering



the chamber and providing a fail safe operation of the biasing chamber.

3,826,310

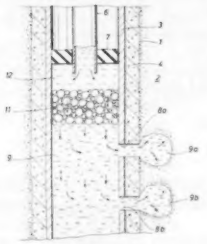
PLUG-DISPLACED SANDPACKING PROCESS

George Thomas Karnes, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Jan. 18, 1973, Ser. No. 324,702

Int. Cl. E21b *43/02*

U.S. Cl. 166—276 **9 Claims**



A slurry of resin, sand and oil, for forming a sand or gravel pack in a well, is injected ahead of a mass of solid particles that form chemically removable plugs across the openings of well casing perforations into which the slurry is injected.

3,826,311

PRODUCING WELL TREATMENT

Miklos Tamas Szabo, Coraopolis; Andrew Jackson Sharpe, Jr., McMurray, and Nancy Spicer Sherwood, Sewickley, all of Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

Filed June 13, 1973, Ser. No. 369,630

Int. Cl. E21b *33/13, 43/16*

U.S. Cl. 166—295 **7 Claims**

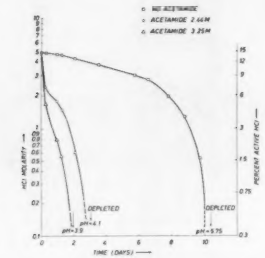
Use of copolymers of (3-acrylamido-3-methyl) butyl trimethyl ammonium chloride and acrylamide to treat producing wells in order to reduce water production and improve the oil-water ratio of said well or gas-water.

3,826,312

SELF-NEUTRALIZING WELL ACIDIZING

Edwin A. Richardson, Houston, and Ronald F. Scheuerman, Bellaire, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed July 24, 1972, Ser. No. 274,778
Int. Cl. E21b *43/16, 43/25*
U.S. Cl. 166—307 10 Claims



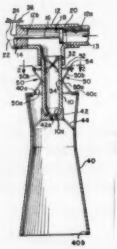
A process for acidizing a subterranean region by contacting it with an acidic solution is improved by dissolving in the solution a pH-increasing reactant that subsequently adjusts the pH of the solution to a selected relatively neutral value.

3,826,313

METHOD OF FIRE PROTECTION USING RECIRCULATION OF COMBUSTION PRODUCTS TO DISCHARGE A FOAM EXTINGUISHANT

Cheng Yao, Weston, Mass., assignor to Factory Mutual Research Corporation, Norwood, Mass.

Division of Ser. No. 277,495, Aug. 3, 1972, Pat. No. 3,780,811, which is a division of Ser. No. 198,386, Nov. 12, 1971, Pat. No. 3,708,015. This application Oct. 2, 1973, Ser. No. 402,833
Int. Cl. A62c *1/14*
U.S. Cl. 169—44 14 Claims



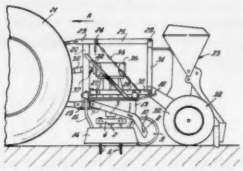
A method of fire protection in which a foam extinguishant is discharged towards the fire in response to a predetermined fire condition in the space to be protected. At least a portion of the foam discharge is terminated and a fluid extinguishant is discharged towards the fire in response to an additional predetermined fire condition.

3,826,314

CULTIVATING IMPLEMENTS

Ary Van Der Lely, 10 Weverskade, Maasland, and Cornelis Johannes Gerardus Bom, 36 Esdoornlaan, Rozenburg, both of Netherlands

Continuation of Ser. No. 43,006, June 3, 1970, abandoned. This application Apr. 24, 1972, Ser. No. 246,738
Claims priority, application Netherlands, June 10, 1969, 6908785
Int. Cl. A01b *33/00*
U.S. Cl. 172—59 5 Claims



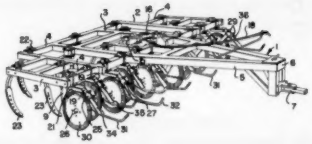
A cultivator connectable to the three point lifting hitch of a tractor and having a plurality of side-by-side rotatable supports with tines. The frame has a trestle which connects to the tractor's hitch. The supports and tines are turnable about shafts and mounted in a row with vertically adjustable screens with locking guides located at each end of the row. The frame of the cultivator includes an upper and two lower arms connected to the tractor's three point hitch. A further implement, such as a seed drill machine has a further coupling trestle which can be pivotally connected to the arms and trails the tine supports. Also, a roller is adjustably mounted on the frame, immediately to the rear of the tine supports. The tines are tapered towards their bent-over tips and can be rectangular in section.

3,826,315

TILLAGE APPARATUS

Calvin B. Blair, P.O. Box 76, Barnard, Kans. 67418

Filed Jan. 19, 1973, Ser. No. 325,176
Int. Cl. A01b *17/00, 49/02*
U.S. Cl. 172—514 10 Claims



Soil management apparatus combines pointed tillage tools with forwardly positioned, swingable rolling disc cutters which are preceded by elongated deflector bars projecting transversely and angularly across the anticipated path of the disc cutters for deflecting upwardly projecting stubble and the like laterally downwardly into the disc cutter path.

3,826,316

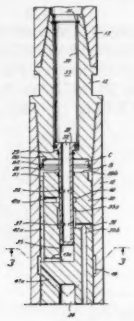
PNEUMATIC IMPACT TOOL

Ross Bassinger, San Antonio, Tex., assignor to Reed Tool Company, Houston, Tex.

Continuation-in-part of Ser. No. 116,980, Feb. 19, 1971, abandoned. This application June 19, 1972, Ser. No. 264,019
Int. Cl. E21b *5/00*; E21c *7/00*
U.S. Cl. 173—73 11 Claims

The impact tool disclosed includes a housing, an anvil in the lower end of the housing, and a hammer to reciprocate in the

housing and strike the anvil a series of blows. A stationary hollow valve member extends into an opening in the top of the hammer and supplies air under pressure from the pipe string to passageways in the hammer that conduct the fluid alternately to opposite ends of the hammer to cause the hammer to reciprocate in the housing. The arrangement is such that



the actuating air acts across the entire cross-sectional area of the upper end of the hammer during its power stroke. Also, a hollow stationary bottom valve can be used to control exhaust from the tool and arranged so that the actuating air acts against the entire cross-sectional area of the hammer during its return stroke.

3,826,317

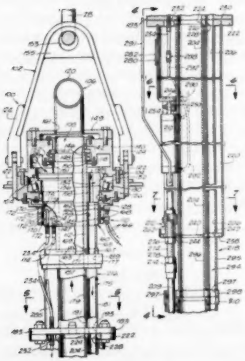
DRILLING APPARATUS

Robert L. Pereau, Irvine, Calif., assignor to Smith International Inc., Santa Fe Springs, Calif.

Division of Ser. No. 177,037, Sept. 1, 1971, Pat. No. 3,757,876. This application Aug. 23, 1973, Ser. No. 390,719

Int. Cl. E21b *19/08;* **E21c** *1/10*

U.S. Cl. 175—162 **5 Claims**



Apparatus for drilling a hole, and for belling out the lower end of the hole into a conical enlargement, in a single pass of the apparatus down the drill hole, which apparatus includes a combined drilling and belling tool. A novel drill stem assembly and a novel kelly bar assembly are also disclosed.

3,826,318

DIGITAL WEIGHING SCALE WITH AN INCREMENTAL MEASURING SYSTEM

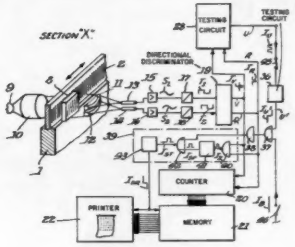
Alfons Baumgartner, Grassau, Germany, assignor to Dr. Johannes Heindenhain, Trannreut, Germany

Filed June 22, 1972, Ser. No. 265,308

Claims priority, application Germany, June 22, 1971, 2130840

Int. Cl. G01g *23/10, 23/365*

U.S. Cl. 177—25 **8 Claims**



A digital scale having an incremental measuring system is disclosed. The scale includes a source of light, a weight-indicating movable grid and a stationary grid all in optical alignment, the two grids having alternately disposed transparent and nontransparent vertical surfaces, wherein the upper portions of said surfaces on the stationary grid are slightly offset from the lower portions thereof. Photoelectric means produce a series of leading and lagging electrical signals when the movable grid moves in response to a load placed on the scale, the signals from the upper portions of the stationary grid leading when the weight indicated by the movable grid is increasing, and the signals from the lower portions leading when the weight is decreasing. An electrical discriminator discerns which signals are leading, and converts them to electrical impulses which are passed to a count-up—countdown counter for recording the weight. Testing circuitry, which determines when the scale is substantially still, produces electrical information for energizing digital means, connected to the counter at that time. During substantial movement of the scale, however, the testing circuit prevents the digital means from being energized, thereby assuring weight readings only when the scale is substantially still.

3,826,319

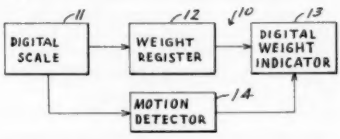
SCALE MOTION DETECTOR

Richard C. Loshbough, Temperance, Mich., assignor to Reliance Electric Company, Toledo, Ohio

Division of Ser. No. 373,907, June 27, 1973. This application Oct. 26, 1973, Ser. No. 409,861

Int. Cl. G01g *23/22*

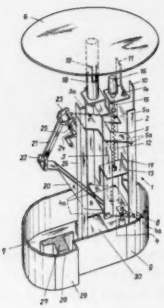
U.S. Cl. 177—25 **2 Claims**



In combination with a system for weighing a load placed on a load receiver and for displaying the measured weight on a digital indicator, a circuit connected to blank the indicator whenever a predetermined degree of motion of the article receiver is detected. Provisions may also be made to blank the indicator when the weight capacity of the system has been ex-

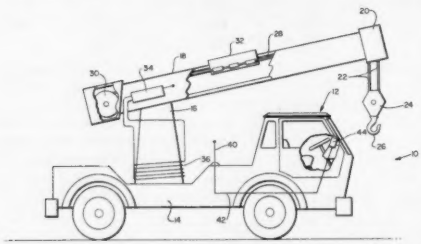
ceeded and, in a price computing scale system, to set the computed value to zero whenever the weight indicator is blanked.

3,826,320
BALANCE
Paul Terraillon, 74 Monnetier-Mornex, France
Filed May 9, 1973, Ser. No. 358,619
Claims priority, application Switzerland, May 15, 1972, 7163
Int. Cl. G01g *23/14, 23/26*
U.S. Cl. 177—170 **4 Claims**



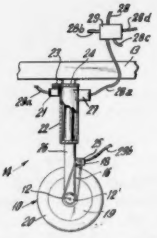
A balance, for example a letter scales, comprises an articulated parallelepiped formed by two upright plates pivotally joined by two transverse plates. One of the upright plates is fixed on a base and the other, which is movable against the action of a spring, carries a scale at its upper end. The lower transverse plate has an extension carrying a pivotally mounted arm which in turn pivotally carries an index at a free end thereof. A pair of upright members on the frame define a vertical guide channel for the free end and for the index which cooperates with graduations on one of the members.

3,826,321
LOAD WEIGHING SYSTEM FOR CRANES WITH ROTATABLE BOOMS
Edward T. Rigney, Wayland; Richard A. Benson, Bedford, and Bradford W. Edgerton, Lynnfield, all of Mass., assignors to Trans-Sonics, Inc., Lexington, Mass.
Filed May 25, 1973, Ser. No. 363,942
Int. Cl. G01g *19/18*
U.S. Cl. 177—210 **20 Claims**



A load weighing system for a crane having a boom which is independently rotatable with respect to an operator's cab carrying an indicator for displaying the load weight. The system uses a boom-mounted dynamometer whose output is an accurate indication of cable tension and therefore load weight. The dynamometer output modulates a transmitter and the transmitter output is fed to a loop around the boom pedestal. The resulting magnetic field surrounding the loop provides a medium for coupling the transmitted signal to the cab-mounted receiver.

3,826,322
ACCESSORY WHEEL AND DRIVE DEVICE FOR A MOTOR VEHICLE
Samuel D. Williams, 1923 Hennessy Pl., Bronx, N.Y.
Filed Sept. 28, 1972, Ser. No. 292,937
Int. Cl. B60s *9/14;* **B62d** *5/04*
U.S. Cl. 180—1 AW **6 Claims**

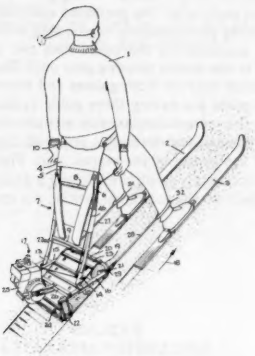


In a preferred embodiment an automobile having four extra accessory utility wheels mounted on hydraulic jacks, with the back two accessory wheels being connected for synchronized steering thereof in both lateral and forward directions of movement of the car as well as the forward two wheels being synchronized with one another for synchronized steering in both lateral and forward directions and there being switch means whereby the front wheels and the rear wheels may be synchronized to one another for the forward and/or lateral steering, and at least one of the sets of front and back accessory wheels being connected for and including propulsion means alternately drivable by the regular automobile motor or by an electrical motor, the electrical motor-including embodiment also including accessory batteries connected to provide electricity to any accessory electrical motor and also connected to continually charged if necessary by the generator of the automobile, this above described combination of this invention providing both parking advantages and emergency power and wheels in the event of flat tires or other mechanical difficulty requiring supplemental driving power for propulsion of the automobile for reasonably short periods of time to remove the automobile from hazardous traffic locations or to propel the automobile to an appropriate next-occurring filling station or repair facility.

3,826,323
PROPELLING APPARATUS FOR SKIERS
Albert R. Mehne, 9 Susquehanna Rd., Ossining, N.Y. 10562
Filed Apr. 12, 1973, Ser. No. 350,371
Int. Cl. B62m *27/02*
U.S. Cl. 180—5 R **11 Claims**

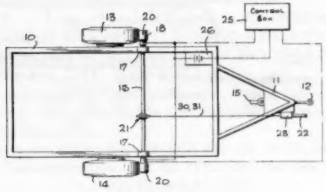
Motor powered apparatus for propelling a skier on skis and which is portable on the skier's back in which a motor powered unit having an endless track has pivotally connected thereto a frame which extends upwardly and forwardly of the unit. The skier is partially supported by the end of the frame

and by his skis, and separation of the skis and the unit is limited by straps attached to the unit and the skier's ankles.



The frame can be detached from the unit and can be used in its inverted position to carry the unit on the skier's back.

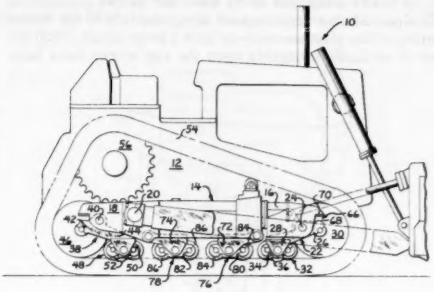
3,826,324
TRAILER MOVER
Duane M. Stevens, 1216 El Monte Dr., Simi, Calif. 93065
Filed Oct. 26, 1972, Ser. No. 300,973
Int. Cl. B62d *11/04*
U.S. Cl. 180—6.5 **9 Claims**



A powered mover is disclosed herein for positioning a wheeled trailer or the like in a forward, rearward or pivotal direction which includes a drive drum associated with each wheel that is pivotally carried on the chassis of the trailer and operably coupled to a drive motor via a drive gear train whereby the exterior periphery of the drum frictionally engages with the tread of the trailer wheel in a driving relationship. A control mechanism is operatively carried on the chassis for positioning the drum into and out of engagement with the tire tread. Powered rotary movement and speed of the drum is imparted to the tire for driving the trailer in a selected direction in response to the direction of the drum rotation as determined by an electrical control circuit.

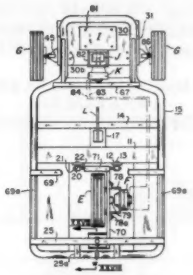
3,826,325
TRACK SUSPENSION ASSEMBLY
Robert J. Purcell, Washington, and Kenneth E. Wehr, Pekin, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.
Filed Aug. 22, 1972, Ser. No. 282,699
Int. Cl. B62d *55/10, 55/30*
U.S. Cl. 180—9.54 **24 Claims**

The track frame of a vehicle is pivotally mounted to the vehicle main frame and has crank members pivotally mounted to the opposite ends of the track frame. Each crank member has mounted thereon an idler and a bogey to which is fixed a pair of track rollers. These idlers and track rollers are engaged by a continuous track chain, and the track frame is supported at the crank member-track frame pivot points by means of the idlers and track rollers. Between the crank members are a pair of link members which are pivotally fixed to the track frame and extend toward each other. Each of these link members also has a bogey and track rollers mounted thereon, these



track rollers being engaged by the track chain. Stop members and resilient pad means are associated with the crank members, link members, and track frame for proper support of the track frame, the particular placing of the crank member-track frame and link member-track frame pivot points being chosen for most efficient operation.

3,826,326
THREE WHEELED AUTOMOTIVE VEHICULAR CONSTRUCTION
David Blair, 307 S. School St., Pittsburgh, Pa. 15202
Filed Nov. 9, 1971, Ser. No. 196,981
Int. Cl. B62d *61/06*
U.S. Cl. 180—25 R **20 Claims**

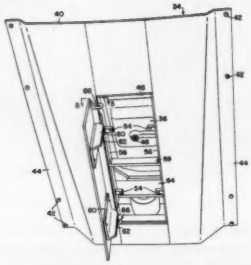


An engine-energized fluid-motor-driven three-wheeled automotive vehicle utilizes a somewhat bottle-shaped continuous basic frame structure whose reduced front end part serves to mount a pair of wheels, a combustion engine and a fluid pump, and whose back end part serves to centrally carry a rear drive wheel and its actuating fluid motor. The construction provides a stable vehicle whose rear drive wheel motor assembly is resiliently positioned to absorb road shock.

3,826,327
VEHICLE BOTTOM GUARD STRUCTURE
David Emmert Stover, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.
Filed Dec. 18, 1972, Ser. No. 316,435
Int. Cl. B62d *25/20*
U.S. Cl. 180—69.1 **7 Claims**

Disclosed is an off-the-road vehicle having a forward-mounted engine, the bottom of which is protected from

damage by obstacles by a bottom guard plate assembly which extends below the bottom of the engine and is releasably secured to the main frame of the vehicle. The plate assembly comprises a centrally located access opening which is normally closed by an access door which is held in place by a plurality of releasable cap screws. The door is provided with a pair of hooks along one of its sides, the hooks cooperating with a pair of abutments located along one side of the access opening of the plate assembly to form a hinge about which the door is vertically swingable once the cap screws have been



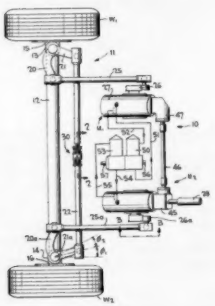
removed. For the purpose of aiding in the installation and removal of the plate assembly to and from its normal position at the underside of the engine, there is provided a length of proof-coil chain which has one end welded to a tractor frame member located above one end of the plate assembly and having a link at its other end slipped over a hook formed on the upper side of the plate assembly. The upper side of the plate assembly is provided with a planar debris-collecting plate which overlies reinforcing ribs of the assembly exclusive of the access door. The access door is also provided with reinforcing ribs.

3,826,328

DUAL HYDRAULIC POWER STEERING SYSTEM

Richard H. Sheppard, c/o R. H. Sheppard Co., Hanover, Pa. 17331

Filed Mar. 20, 1972, Ser. No. 236,410
Int. Cl. B62d 5/10
U.S. Cl. 180—79.2 R **14 Claims**



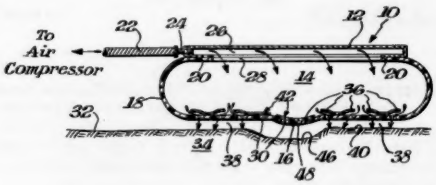
Steering for wheels of a vehicle is provided by two separate and independent steering combinations of first and second power operating units, corresponding first and second power supply means and control means with each combination providing only approximately 50 percent of the total design force required to allow the operator of the vehicle to comfortably turn the wheels. The system thus is designed to provide a safety factor of allowing approximately one-half force power steering upon failure of one combination. With two operating units, one adjacent each wheel, a resilient interconnection in the tie rod of the steering linkage is required. In a tandem wheel arrangement, a steering gear or operating unit is provided on each axle. The preferred embodiment includes a master steering gear assembly on one side of the vehicle and a slave gear assembly on the other with two in-piston valves positioned in the master steering gear unit. The valves include spool elements that are both guided and maintained in alignment by a guide pin having three guide surfaces. Transfer of the fluid in the second combination includes telescoping tubes extending through and forming a seal with the passageway at tne end of the piston of the master unit. The two spool elements are accurately positioned during manufacture by interposed resilient means and radial locking pin arrangement.

3,826,329

AIR CUSHION APPARATUS

Arthur G. Crimmins, and William J. Nissley, Jr., both of Wilmington, Del., assignors to All American Industries, Inc., Wilmington, Del.

Filed May 8, 1972, Ser. No. 250,934
Int. Cl. B65g 7/06; B60v 1/00
U.S. Cl. 180—125 **11 Claims**



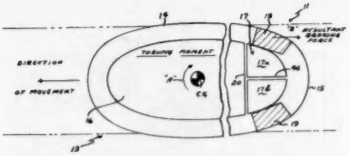
Air pressure is conserved in an air cushion load conveying apparatus by valve elements disposed within the air pressure chamber in operative association with an array of relatively small holes which provide the pressurized air cushion between the wall of the chamber and an adjacent surface. The valve elements are constructed and arranged to rapidly respond to the pressure differential across the holes. They quickly open and transmit chamber pressure to the pressurized air cushion when an object is disposed close to the hole and rapidly close and preserve pressure when there is no object and concomitant air cushion disposed adjacent the hole. The valve elements are flapper valves made of a single large perforated flexible sheet or a number of smaller sheets which substantially obstruct the holes in the presence of a high differential pressure. The flapper valves inherently leak, which makes them sensitively respond to changes in pressure. The leakage is, however, not enough to cause an undue loss of air through closed holes. Bleed holes may be provided, if necessary, to accelerate movement under special conditions. The perforated chamber wall may be rigid for operating against regular smooth surfaces or it may be flexible for operating against irregular or interrupted surfaces. A flexible walled chamber may be used under a rigid pallet for transporting a load over irregular surfaces. The upper surface of the rigid pallet may also be perforated and valved to facilitate sliding loads on and off, and the pressurized air may be alternately supplied to the upper and lower portions to facilitate loading, unloading and transport.

3,826,330

BRAKE AND STABILIZER FOR AIR CUSHION VEHICLES

Lawrence L. Midolo, 1475 Black Oak Dr., Centerville, Ohio 45459, and Lee R. Armstrong, 47 Armstrong Rd., Enfield, Conn. 06082

Filed May 21, 1973, Ser. No. 362,021
Int. Cl. B60v 3/08
U.S. Cl. 180—116 10 Claims



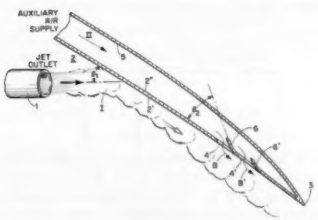
An air cushion machine-inflatable trunk device compartmentalized into a main, positive pressure, air cushion-chamber producing a supporting lift force on the machine, and an auxiliary, negative or vacuum pressure-chamber further divided into left and right-side, braking and stability control sections, each encompassing a brake lining or friction pad assembled in spaced-apart relation to the bottom of the aft end portion of the trunk device and producing a downward tilting movement to the machine-aft end for thereby bringing the brake linings or friction pads into positive braking contact with the ground surface.

3,826,331

METHOD OF AND APPARATUS FOR REDUCING SOUND GENERATED BY SURFACES IN FLUID JET STREAMS AND THE LIKE

Terry D. Scharton, and Benjamin Pinkel, both of Santa Monica, Calif., assignors to Bolt, Beranek and Newman, Inc., Cambridge, Mass.

Continuation of Ser. No. 230,380, Feb. 29, 1972, abandoned.
This application Aug. 20, 1973, Ser. No. 389,786
Int. Cl. B64d 33/06
U.S. Cl. 181—33 HC 8 Claims



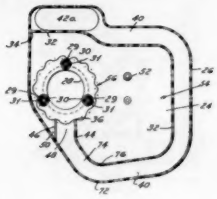
Noise is reduced by the use of preferably slot apertures near the trailing edge, for example, of a sheet, over one surface of which a fluid jet or other stream is passing, for directing fluid from an auxiliary source which is ducted to the opposite face of the sheet, through the sheet to produce buffer layers between said one surface and said fluid jet at and downstream of the said apertures, thereby suppressing noise generation at the discontinuity provided by the said trailing edge of the sheet.

3,826,332

AIR INTAKE SILENCER FOR INTERNAL COMBUSTION ENGINES

Charles H. Tuckey, Cass City, Mich., assignor to Walbro Corporation, Cass City, Mich.

Filed Dec. 27, 1972, Ser. No. 318,892
Int. Cl. F01n 1/02, 1/06
U.S. Cl. 181—35 A 4 Claims



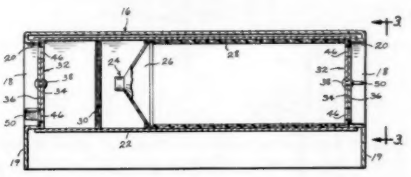
An air intake silencer for internal combustion engines to be attached directly to a carburetor intake having a large volume central chamber connected to the carburetor intake and surrounded by a peripheral tortuous passage feeding air from an outside inlet to the carburetor intake. The construction includes a gravity low point for the collection of fuel wherein it may be caught up into the incoming air stream and re-introduced into the engine. A relief valve is also provided to relieve the unit against back-fire pressures.

3,826,333

BAFFLE FOR A SOUND PRODUCING DEVICE

James K. Buckwalter, 65 Robert E. Lee Dr., Wilmington, N.C. 28401

Filed Mar. 21, 1973, Ser. No. 343,251
Int. Cl. G10k 13/00; H04r 1/28
U.S. Cl. 181—31 B 4 Claims

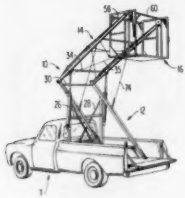


A baffle which is used in a sound producing device and which includes overlying first and second disks having coincident axes. The first disk is rotative about its axis relative to the second disk and has a plurality of equi-angularly spaced and equi-radially disposed slotted openings formed therein. The second disk also has a plurality of equi-angularly spaced, equi-radially disposed slotted openings formed therein. Each slotted opening in the first disk is disposed at an angle to a radial line passing through the opening. Each slotted opening in the second disk is disposed at an angle to a radial line extending through such opening with the angle of the second disk opening differing from the angle of the first disk openings so that upon rotation of the first disk relative to the second disk selected portions of the slotted openings in the second disk will be covered by the first disk openings to produce circumferentially spaced openings through the baffle located a selected radial distance from the axes of the disks.

3,826,334
MOBILE AERIAL PLATFORM

Robert L. Spillman, 221 S. Cassady Ave., Columbus, Ohio 43209

Filed July 7, 1972, Ser. No. 269,811
Int. Cl. B66f 11/04
U.S. Cl. 182—2 14 Claims

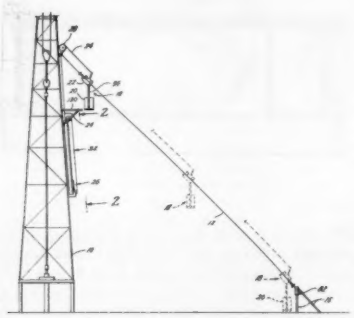


The platform includes an upstanding support structure carried by a wheeled vehicle. A boom is pivotally connected at one end to the upper end of the support structure. A platform is pivotally carried by the boom at its opposite end. At least one fluid cylinder connects between the support structure and the boom to raise and lower the boom and platform. A pair of flexible lines are fixed at opposite ends to the support structure sides and the platform, respectively and are reaved over sheaves on the boom whereby the platform is partially supported thereby and maintained in a horizontal position throughout the full range of pivotal movement of the boom. The platform is mounted on a vehicle, for example, a truck, trailer, fork-lift truck, and the like.

3,826,335
PERSONNEL/LOAD CARRYING SYSTEM

Marion F. Allen, P.O. Box 3387, Odessa, Tex. 79760

Filed Feb. 1, 1973, Ser. No. 328,753
Int. Cl. A62b 1/06
U.S. Cl. 182—10 20 Claims

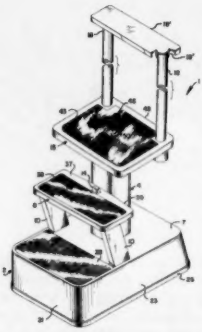


An apparatus system for moving personnel and/or other loads from one elevation point to another. The apparatus system includes a carrier traversing an inclined carrying line secured between higher and lower elevation points, a movable counterweight for counterbalancing weight of the carrier, a cable interconnecting the carrier and counterweight, sheaves coacting with the cable, and fluid power means for adjusting rate and direction of movement of the carrier along the carrying line, the carrier being automatically returnable to the upper elevation point if desired. Braking means are provided to stop the carrier in an emergency situation.

3,826,336
STEP STOOL

Harold Cramer, 8419 Linden Ln., Prairie Village, Kans. 66207

Filed Mar. 13, 1973, Ser. No. 340,695
Int. Cl. A47c 9/12
U.S. Cl. 182—15 12 Claims

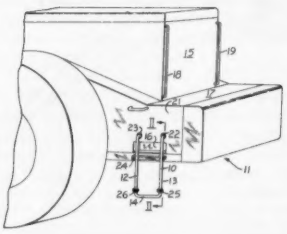


A step stool includes a base engageable with a support surface, such as a floor or the like, and an upstanding support member or standard having a lower end thereof received in a first socket depending from a flat top of the base. A first step member is supported on the base and the standard. A second step member or platform is mounted on an upper end of the standard whereby the first step member, standard, and second step member or platform are removably mounted relative to the base. The step stool may include one or more steadying members having a lower end portion thereof supported relative the second step member and extending upwardly therefrom and adapted to be grasped by a person standing on the step stool.

3,826,337
RETRACTABLE LADDER

Neil R. Liptak, Joliet, and Beno E. Echerd, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 28, 1973, Ser. No. 374,474
Int. Cl. B60r 3/02
U.S. Cl. 182—91 6 Claims



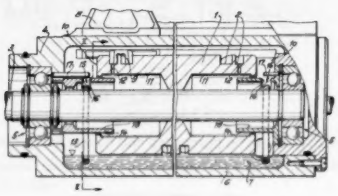
A retractable ladder is in the form of a generally U-shaped member adapted for operative use in a vertical position and which may be stored in an inoperative position within the supporting body by lifting the bottom rung or step and pushing the ladder into the body. Optional stops are provided on the ladder for limiting its travel. Optional hand grip means are also provided.

3,826,338

DEVICE FOR FEEDING A LUBRICATING OIL OR THE LIKE TO THE PERIPHERY OF A ROTATING ELEMENT

Anton Josef Mair, Durach, Germany, assignor to A. Ott, Kempten, Germany

Filed Feb. 21, 1973, Ser. No. 334,369
Int. Cl. F01m 9/06; F16n 7/26
U.S. Cl. 184—11 A 8 Claims



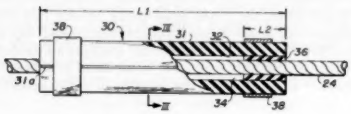
Apparatus for feeding lubricating oil to the surface of a rotating element, such as the thread of a reversible thread roller including a shaft fixed to the rotating element which has a cylindrical bore and at least one radial passage opening from the bore to said surface, an enlarged ring freely supported on the shaft, and means defining a friction surface against which the ring engages to transfer oil from the ring to the bore and thence through the passage as a result of centrifugal force. An oil sump is provided below the rotating element into which a portion of the ring projects at all times.

3,826,339

VIBRATION DAMPER FOR ELONGATE MEMBERS

Hal R. Brokaw, 2052 Galveston, San Diego, Calif. 92110

Filed Sept. 7, 1973, Ser. No. 396,271
Int. Cl. F16f 7/12
U.S. Cl. 188—1 B 5 Claims



A vibration damper for reducing vibration of an elongate member under tension, such as a cable utilizing a sleeve member clamped around the cable at both ends only, in a manner to be free to rock on the cable during vibration to suppress oscillations by shifting the natural resonant frequency of the vibrating cable.

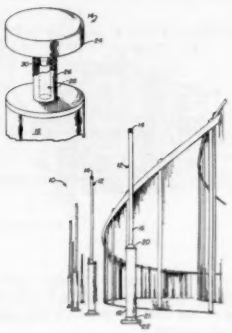
3,826,340

VIBRATION DAMPER FOR SLENDER VERTICAL STRUCTURES

Hal R. Brokaw, 2052 Galveston, San Diego, Calif. 92110

Filed Sept. 19, 1973, Ser. No. 398,891
Int. Cl. F16f 7/10; H01q 1/00
U.S. Cl. 188—1 B 3 Claims

A damper for detuning a vertical slender structure such as a monopole antenna, subject to wind induced vibrations, the damper having a "mushroom" shaped configuration with a cap mounted on one end of a flexible stem, the other end of



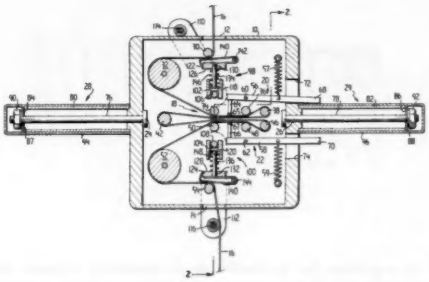
the stem secured to the top of the structure enabling the cap to oscillate out-of-phase with the vibrating structure.

3,826,341

EMERGENCY DESCENT APPARATUS

Albert C. Ledner, 5328 Bellaire Dr., New Orleans, La. 70124

Continuation-in-part of Ser. No. 344,436, March 23, 1973.
This application Sept. 11, 1973, Ser. No. 396,241
Int. Cl. A62b 1/14
U.S. Cl. 188—65.5 6 Claims



A device useful for descending from an elevated location along a strand of webbing or similar material is disclosed, which includes a housing containing a tortuous path through which the strand is drawn as the housing moves downward on the strand. Means for automatically maintaining an essential uniform rate of descent essentially irrespective of the weight of the escaping person are included, and a unique handle arrangement permits immediate reuse of the device without having to draw the strand back through the housing.

3,826,342

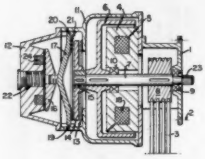
UNIT TRANSMISSION GEAR INCLUDING A DECELERATING DEVICE AND AN ELECTROMAGNETIC BRAKE

Jean Noly, La Clayette, France, assignor to Potain, Chevilly Larue (Val de Marne), France

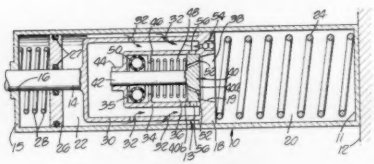
Filed Aug. 2, 1972, Ser. No. 277,328
Claims priority, application France, Aug. 6, 1971, 71.29642
Int. Cl. B60t 13/74
U.S. Cl. 188—171 3 Claims

A unit decelerating assembly may be used for control of cranes or travelling cranes. The working speed of the belts 3 is

transmitted to the end shaft 23 which is slowed down to an extent depending on the current flow supplied to the fixed inductor 4–18 of an eddy-current clutch (bell 6). The spring 22 ensures the braking of the disc 14 to block the apparatus in the event of a failure of current.



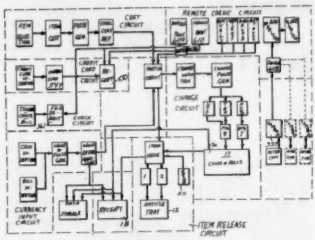
3,826,343
PRESSURE REGULATOR FOR HYDRAULIC SHOCK ABSORBERS
Bernard R. Heymann, Glendale, Calif., assignor to Conair, Inc., Glendale, Calif.
Filed Dec. 8, 1972, Ser. No. 313,590
Int. Cl. F16f 9/34
U.S. Cl. 188—282 **3 Claims**



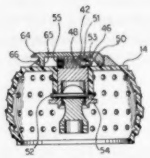
A regulator for hydraulic shock absorbers wherein the moveable piston has a pressure control chamber provided with a poppet valve. A volume of air in the chamber behind the poppet valve, receives the initial impact, compressing it so that the poppet valve moves instantaneously, uncovering metering orifices in the control chamber to permit a high rate of fluid flow from the high pressure side of the piston, thereby substantially eliminating initial peak loads on the unit. As flow rate decreases, the poppet moves to gradually cover the metering orifices, maintaining a constant pressure in the high pressure side, thereby dissipating the impact at the maximum allowable rate.

3,826,344
APPARATUS FOR TRANSACTING BUSINESS
Eric C. Wahlberg, 32 Eighth St., Stamford, Conn. 06905
Continuation of Ser. No. 816,565, April 16, 1969, abandoned.
This application Aug. 9, 1971, Ser. No. 170,279
Int. Cl. G07f 7/00
U.S. Cl. 194—2 **26 Claims**

Apparatus for transacting business by the use of a standard currency, credit cards, checks, bank drafts, deposit vouchers, large denomination paper currency or foreign currency including means for registering a credit against an account or the cost of items to be purchased and means for remotely controlling a plurality of such apparatuses.



3,826,345
PRINT HEAD MOUNTING ASSEMBLY
Harry R. Miller, Trumansburg, N.Y., assignor to SCM Corporation, New York, N.Y.
Filed Jan. 26, 1973, Ser. No. 326,622
Int. Cl. B41j 1/60
U.S. Cl. 197—52 **7 Claims**

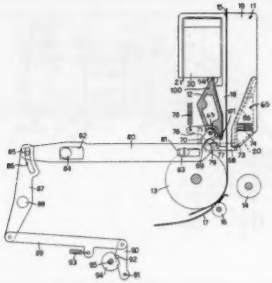


Improved means for releasably locking a typewriter ball-type print head to a driving head shaft are disclosed. The print head has a downwardly-projecting hub which is slidably received on the head shaft and is axially locked thereto by means of a spring-loaded locking pin which snaps out from its retracted position within the head shaft to rest on the top wall of the print head, the print head being axially releasable by operating a cam lever located on the print head top wall. A key pin extending from the head shaft engages a key slot at the lower edge of the hub when the print head is seated on the drive shaft to angularly lock the print head to the head shaft.

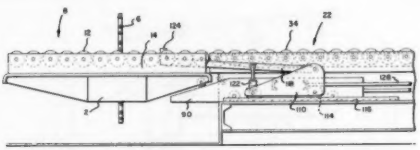
3,826,346
CARD GUIDE FOR FRONT-FEED DEVICE IN ACCOUNTING MACHINE OR THE LIKE
Piero Musso, Ivrea (Turin), Italy, assignor to Ing. Co. Olivetti & Co., S.p.A., Ivrea (Turin), Italy
Filed May 10, 1972, Ser. No. 251,991
Claims priority, application Italy, May 12, 1971, 68568/71
Int. Cl. B41j 13/00
U.S. Cl. 197—127 R **5 Claims**

A card guide for accounting machine front-feed devices includes two symmetric hopper elements slidably mounted on a supporting bar for adjusting the distance between them in order to accomodate different types of accounting cards and forms. The hoppers are secured to the supporting bar by a lever-operated pair of shoes being commonly pivoted and located at the edge portions of the hoppers for improving mechanical rigidity. Each hopper is further provided with actuable gripper means for firmly retaining cards in the hopper

during printing and releasing the cards for permitting replacement. The main shaft of the accounting machine automatically governs the cyclic operation of the gripper means through a linkage.



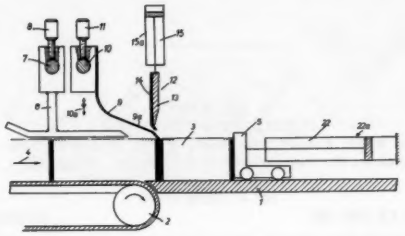
3,826,347
CONVEYOR APPARATUS
Andrew T. Kornylak, Hamilton, Ohio, assignor to Kornylak Corporation, Hamilton, Ohio
Filed May 3, 1972, Ser. No. 249,987
Int. Cl. B65g *47/00*
U.S. Cl. 198—20 R **9 Claims**



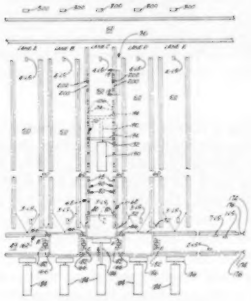
The disclosure relates to apparatus for bringing the load-supporting surface of the tray of a vertical conveyor or elevator into horizontal alignment with the load-supporting surface of a horizontal conveyor and for transferring a pallet load between the tray and the horizontal conveyor. After the tray has been stopped at a transfer station, a pair of wedges carried by the horizontal conveyor is moved under the tray in engagement therewith to support the latter during transfer of the pallet load. The horizontal conveyor also carries shiftable means arranged to engage the under side of the load in order to displace it between the tray and the horizontal conveyor.

3,826,348
ARTICLE SELECTION AND SEPARATION APPARATUS
Roland Preisig, Yens, and Arthur Frei, St. Sulpice, both of Switzerland, assignors to J. Bobst & Fils SA, Prilly, Switzerland
Filed Sept. 12, 1972, Ser. No. 285,841
Claims priority, application Switzerland, Sept. 17, 1971, 13619/71
Int. Cl. B65g *47/26, 59/00*
U.S. Cl. 198—34 **5 Claims**

An apparatus for selecting and separating articles, such as blanks, comprising article selection means intended to bear upon the edge of essentially vertically arranged articles in such a manner that during displacement of a stream of such articles in such a manner that during displacement of a stream of such articles the article selection means successively follows or moves over each article edge. A separator or knife is located transverse to the articles with respect to the direction of flow of the stream of articles. This separator or knife is intended to bear upon the selection means and serves to penetrate between two successive articles without coming into contact with both of these articles at the beginning of its penetration between two such articles. There is also provided means for adjusting the pressure exerted by the selection means upon the edge of the articles.



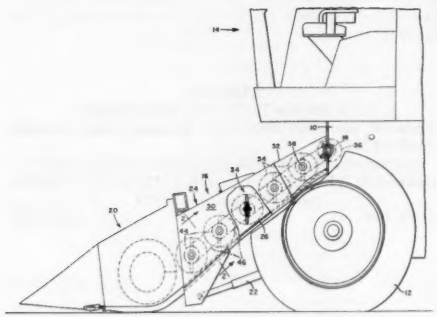
3,826,349
LIVE STORAGE CONVEYOR SYSTEM
Clarence H. Stevenson, III, 308 W. Glenoaks Blvd., Glendale, Calif. 91202
Continuation-in-part of Ser. No. 35,020, May 6, 1970, abandoned. This application Sept. 8, 1972, Ser. No. 287,499
Int. Cl. B65g *37/00, 25/08*
U.S. Cl. 198—81 **38 Claims**



A conveyor system has a cross-feed conveyor for moving stacks of cases to an accumulating area, and an in-feed transfer system for selectively feeding the stacks onto respective live storage conveyors in the accumulating area. Each live storage conveyor includes a track for supporting the stacks of cases, longitudinally spaced apart engaging lugs pivotally mounted on a reciprocating carriage centered in each track, and respective sensing members for sensing the presence of stacks located on the track and for urging the lugs into contact with the stacks of cases located forward of the engaging lugs. Each forward stroke of the carriage pushes the engaging lugs against the stacks to move the stacks forward along the conveyor track. The sensing members are positioned forward of their respective engaging lugs, and each sensing member is depressed by a stack positioned on the carriage above it to break contact between the sensing member and its respective lug. This causes the lug to drop under gravity to an inoperative position so the lug will not move a stack forward on the track when there is no unoccupied space for receiving it. The engaging lug at the end of each conveyor track is normally maintained in an inoperative position while stacks are being accumulated on the track. A slidable bar moves a separate lug lifting member into engagement with each lug to move all lugs into an operative raised position when it is desired to override

the instructions of the sensing members and discharge the accumulated stacks, one-by-one, onto an out-feed conveyor leading from the accumulating area to a shipping area.

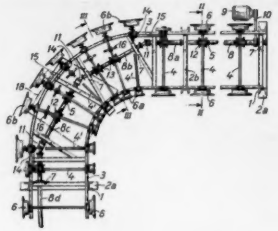
3,826,350
PADDLE-TYPE CONVEYOR
Gene Roger Fowler, and Sidney Elmer Anderson, both of Geneseo, Ill., assignors to Deer & Company, Moline, Ill.
Filed Apr. 2, 1973, Ser. No. 347,059
Int. Cl. B65g *37/00*
U.S. Cl. 198—82 **4 Claims**



A combine has a forward harvesting header, a separating mechanism in the combine body, and a fore-and-aft upwardly and rearwardly inclined feeder housing between the header and the combine body for delivering the harvested crop to the separating mechanism. The feeder housing has an upwardly and rearwardly inclined floor and opposite upright sidewalls, and a plurality of rotary, axially transverse, paddle-type impellers extend between the sidewalls with their peripheries proximate to the floor and to one another, so that as the impellers rotate the crop is engaged by successive impellers and moved upwardly and rearwardly along the floor. Each impeller is formed by an axial shaft and a pair of flexible, radial paddles attached to the shaft, each paddle being formed by a pair of tire carcass members spanning the width of the feeder housing and having a curvature about a transverse axis parallel to the shaft, the tire carcass members being attached to the shaft with their concave sides facing each other and with their outer edges at the periphery of the impeller.

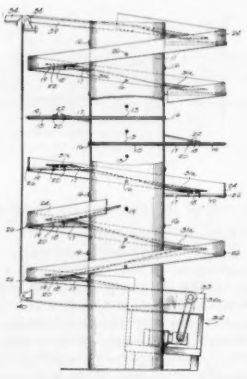
3,826,351
TRAY CONVEYOR
Hans-Georg Fromme, Wetzlar, Germany, assignor to Firma Fromme GmbH., Wetzler, Germany
Filed Mar. 15, 1972, Ser. No. 234,890
Claims priority, application Germany, Aug. 9, 1971, 0213979
Int. Cl. B65g *13/02*
U.S. Cl. 198—127 R **3 Claims**

A tray conveyor supports the trays and laterally guides them, as well as propels them by flanged wheels mounted on the ends of transverse shafts which are driven through cross-belt drives from a longitudinal main drive shaft. In the bend sections, the conveyor line has its transverse shafts inclined and provided with smaller diameter flanged wheels on their



inner end, thus maintaining the same conveying plane, while causing the trays to move along a curved path.

3,826,352
SPIRAL COLUMN FOR ENDLESS CHAIN CONVEYOR
Jacob Van Zon, Port Hope, Ontario, and Russel J. Lake, Cobourg, Ontario, both of Canada, assignors to Rexnord Inc., Milwaukee, Wis.
Filed Oct. 27, 1972, Ser. No. 301,566
Int. Cl. B65g *15/00*
U.S. Cl. 198—136 **8 Claims**



A hollow steel upright cylinder is provided with a series of projecting round rods forming a spiral. The brackets which support the spiral track for the conveyor and an outer spiral guide are assembled and supported by the rods with intermediate lengths of tubing. The track and guide are radially positioned uniformly and readily by the predetermined lengths of the tubing. The ends of each rod are threaded and fitted with nuts to secure the parts on the rod.

3,826,353
CONVEYORS
Cecil Henry Greasley, 518 Chester Rd., Woodford, England
Filed Aug. 4, 1972, Ser. No. 278,166
Int. Cl. B65g *15/26*
U.S. Cl. 198—139 **7 Claims**

A conveyor includes a first elongated support which is movably coupled to a support structure, and a second elongated support which is supported by the first support. A conveyor belt, engaged with the first support, the second support, and a motor, tends to extend or retract the second support with respect to the first support depending on the sense of rotation imparted to the belt by the motor. However, brake

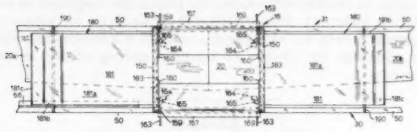
means connected between the first and second supports continuously create a frictional force which prevents relative motion between the first and second supports due to the action of the free running belt. The second support includes means for

directly trapping the moving belt, thereby causing the belt to apply a force between the first and second supports which overcomes the frictional force provided by the brake means and creates relative motion between the first and second supports.

3,826,354
HOPPER AND FEED LEVELER FOR A TAPERED BED CONVEYOR

Paul Patz, Pound, Wis.

Filed Sept. 26, 1973, Ser. No. 400,884
Int. Cl. B65g *19/08*
U.S. Cl. 198—171 **9 Claims**



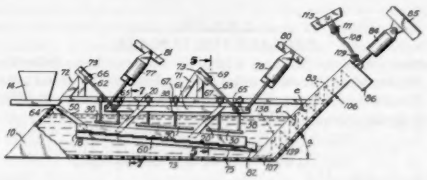
A conveyor comprising a tapered bed and a chain-flite assembly drivable in either or both directions for moving comminuted material in either one direction along the bed or in opposite directions from a location intermediate the ends of the conveyor is provided with an adjustable hopper and feed leveler for receiving the material from a source, such as another conveyor, depositing the material at a desired rate and location on the bed, and for leveling the material as it is moved along the bed by the flites so that the tapered bed and conveyor act to evenly distribute feed along the length of the bed.

3,826,355
CONTINUOUS PLATING SYSTEM

Elbert R. Faust, Litchfield, Conn., assignor to The Buehler Corporation, Indianapolis, Ind.

Division of Ser. No. 120,635, March 3, 1971, Pat. No. 3,699,985, which is a continuation-in-part of Ser. No. 796,033, Feb. 3, 1969, Pat. No. 3,616,423. This application June 29, 1972, Ser. No. 267,408
Int. Cl. B65g *15/42*
U.S. Cl. 198—220 BA **5 Claims**

An exit conveyor for continuously removing articles from a container. A longitudinally extending conveyor trough having a sawtoothed floor is angularly disposed in said container with its lowermost end positioned to receive articles to be removed and its uppermost end positioned to discharge the articles. The conveyor trough is cyclically driven rapidly forwardly and upwardly to transport articles in said trough forward and upward, and then abruptly rearwardly and downwardly to momentarily suspend said articles above said trough. The trough is then held for a predetermined dwell period to permit inertial

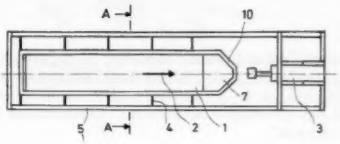


deposition of the suspended articles forward and upward of their original position.

3,826,356
VIBRATORY CHUTE

Dietrich Kroger, Breckenheim, Germany, assignor to Firma Jean Netter, Weisbaden, Germany

Filed July 3, 1972, Ser. No. 268,680
Claims priority, application Germany, July 7, 1971, 2133838
Int. Cl. B65g *27/00*
U.S. Cl. 198—220 CA **1 Claim**

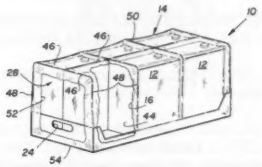


A vibratory chute is disclosed with a material transporting surface, such as a trough, that is suspended in the manner of a pendulum and that is thrust into sudden swinging movement and suddenly decelerated thereafter by a drive means, e.g., in the form of a piston rod with a buffer.

3,826,357
DISPLAY PACKAGE

Lee J. Roth, 9 Fairbanks Boulevard, Woodbury, N.Y. 11797

Filed Dec. 1, 1972, Ser. No. 311,132
Int. Cl. B65d *65/16, 85/62*
U.S. Cl. 206—45.33 **5 Claims**



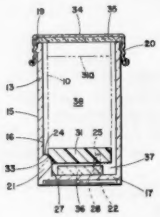
In a display, a combination of cardboard componants which form slightly oversized compartments for multiple products, and heat-shrunk outer wrap about said componants and, of course, about said products in their display positions within the compartments. The portion of the wrap coextensive with any one compartment can be ruptured to provide a removal opening therein, and the peripheral portion which bounds such opening nevertheless remains effectively supported on the cardboard walls bounding such compartment so that the

opening is localized to that compartment and does not adversely affect the protective function of the remainder of the wrap.

3,826,358
PACKAGE FOR TABLETS

Arthur Devon Butler, Elkhart; Robert Lee Debroka, Mishawaka; Horace Bradley Moyer, Elkhart, all of Ind., and Ronald Lee Yinger, Edwarsburg, Mich., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed May 10, 1972, Ser. No. 251,997
Int. Cl. B65d *81/26, 85/56;* **B01f** *3/06*
U.S. Cl. 206—204 **4 Claims**

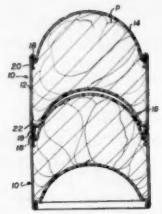


A combination of a tubular container having inwardly projecting holding means and cushion means frictionally engaged therewith adjacent the bottom end wall. Am ambient effective element may be retained between the cushion means and the bottom end wall.

3,826,359
PACKAGING DEVICE

Nicholas M. Brecher, 2 Manor Ln., Lawrence, N.Y. 11559

Filed June 9, 1972, Ser. No. 261,273
Int. Cl. B65d *21/02, 43/04*
U.S. Cl. 206—216 **2 Claims**

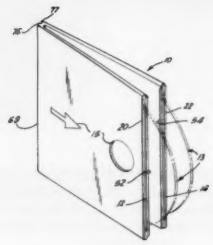


A packaging device comprising an open-ended tubular sleeve and a pair of shells, one of which projects outwardly of one end of said sleeve and the other of which projects inwardly of the other end of said sleeve to define between the sleeve and the shells a compartment for an article of merchandise. The outwardly projecting shell in one such packaging device being receivable into the inwardly projecting shell of another such packaging device whereby a pair of said packaging devices may be nested one within the other. The two shells are releasably securable to each other to define a storage enclosure for such article of merchandise.

3,826,360
PHONOGRAPH RECORD JACKET

Paul B. Shore, Kings Point, N.Y., assignor to Shorewood Packaging Corporation, New York, N.Y.

Filed Feb. 20, 1973, Ser. No. 333,962
Int. Cl. B65d *27/08, 85/30*
U.S. Cl. 206—312 **6 Claims**

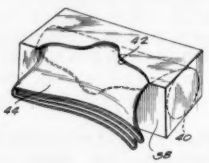


An improved phonograph record jacket having at least one pocket to receive a phonograph record is provided. The jacket is formed from at least two blanks of sheet material, one superimposed upon the other with each blank containing two side by side panels. Glue flaps extend from the top and bottom edges of both panels of one of the blanks and are adhesively joined to the panels of the other blanks. A spine is formed by folding the joined blanks along the line separating the two panels. In the fold condition, the glue flaps cooperate to provide a palletlike support for the records to be contained therein thereby maintaining the records in a flat position so as to minimize the danger of warpage during record storage periods.

3,826,361
PLASTIC BAG DISPENSER SYSTEM

William F. Heckrodt, Menasha, Wis., assignor to Presto Products Incorporated, Appleton, Wis.

Filed Dec. 13, 1972, Ser. No. 314,865
Int. Cl. B65h *55/00;* **B65d** *85/00;* **A47k** *10/24*
U.S. Cl. 206—409 **6 Claims**

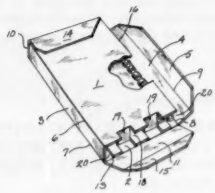


Plastic bags which are each folded a number of times along parallel fold lines are arranged in overlapping sequence in the direction of the fold lines and are rolled up to form a cylindrically shaped coreless roll of bags. The cylindrical roll is contained within a package having an opening through which the leading bag can be pulled off the roll. The package is large enough to allow the roll to rotate when the bag is pulled off, and the bags are overlapped sufficiently so that the leading edge of the next bag will be rotated to a position of access through the package opening when the leading bag is pulled off the roll.

3,826,362
SHIPPING FOLDER

Edward J. Staskus, Elm Grove, Wis., assignor to W. A. Krueger Co., Bookfield, Wis.

Filed Aug. 23, 1972, Ser. No. 283,079
Int. Cl. B65d *5/02*
U.S. Cl. 206—424 **5 Claims**

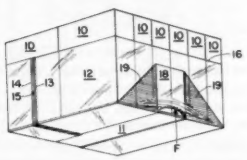


A one piece cushioned shipping folder for books has the inner end flaps relieved to accommodate an enlarged spiral ring binder or backing for the book and folded to protect the book backing from crushing.

3,826,363
STORAGE AND DISPLAY PACKAGE

John S. Amneus, Woodlawn, and Justin G. Leisring, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Mar. 28, 1972, Ser. No. 238,898
Int. Cl. B65d *65/02, 75/20*
U.S. Cl. 206—430 **6 Claims**



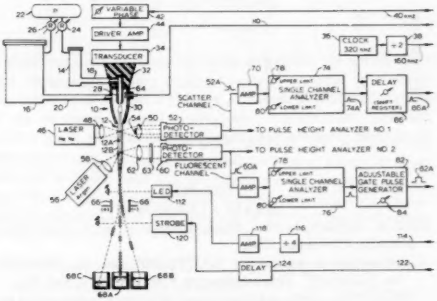
A tray-like storage and display package is formed from a flexible material, which is preferably transparent, such as polyethylene which is wrapped about the sides of an array of containers and underlies at least a portion of the bottom of the array. Handles preferably formed by the film itself as a result of the folding pattern used in assembling the package, are provided. The film normally has little or no tension about the array of containers thereby allowing free removal of containers. The position of the handle means is such that the application of lifting force to them also imparts circumferential tension tightening the material thereby uniting the containers into an integral unit to allow handling.

3,826,364
PARTICLE SORTING METHOD AND APPARATUS

William A. Bonner, La Honda; Richard G. Sweet, and Henry R. Hulett, both of Palo Alto, all of Calif., assignors to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed May 22, 1972, Ser. No. 255,443
Int. Cl. B07c *5/34*
U.S. Cl. 209—3 **20 Claims**

A particle sorting method and apparatus for separating minute particles incorporated in a liquid stream in accordance with selected particle parameters. Particles such as biological cells to be separated are incorporated in the inner or central portion of a confined coaxial flow stream which includes an outer cell-free fluid sheath portion. This coaxial flow stream is released through a vibrating nozzle for inspection by one or more cell sensing means for sensing cells in the jet stream immediately downstream of the nozzle. Beam illumination and/or observation of the jet stream for particle sensing is effected outside of the nozzle. Vibration of the nozzle breaks the coaxial jet stream into a series of uniform drops downstream of the cell sensing means, and signals from said means are used to initiate delayed charging pulses applied to preselected cell-containing drops as they break from the vibrating fluid jet. Nozzle vibration is synchronized with the charging pulse to



prevent separation of drops from the stream during the drop charging pulse on and off transition times, thereby preventing undesired drop charging. The drops pass between charged deflection plates where the charged drops are deflected into appropriate receptacles. By using a plurality of sensing means such that all cells are sensed by one sensor, and only certain cells, i.e. cells characterized by a particular parameter value, are sensed by another sensor, drops containing both cells characterized by a particular parameter and cells not characterized by that parameter can be sorted away from the receptacle for cells characterized by that particular parameter.

3,826,365
BENEFICIATING CLAY BY SELECTIVE FLOCCULATION AND MAGNETIC SEPARATION OF IMPURITIES

Venancio V. Mercade, Metuchen, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Township of Woodbridge, N.J.

Continuation-in-part of Ser. No. 76,219, Sept. 28, 1970, Pat. No. 3,701,417. This application June 13, 1972, Ser. No. 262,266The portion of the term of this patent subsequent to Oct. 31, 1989, has been disclaimed.
Int. Cl. B03b *1/04;* **B03c** *1/30*
U.S. Cl. 209—5 **10 Claims**

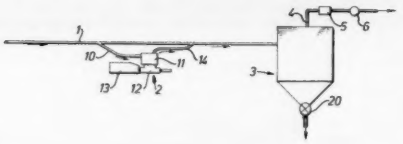
Colored titaniferous impurities are removed from a deflocculated aqueous slip of kaolin clay by activating the impurities with polyvalent cations, e.g., calcium ions, selectively flocculating the impurities by addition of a synthetic organic anionic polyelectrolyte and then passing the slip through a high intensity magnetic field, whereby the flocculated impurities are separated from the slip containing brightened purified clay.

3,826,366

DEVICE FOR SELECTIVELY DISCHARGING REFUSE MATERIAL FOR SEPARATE RECOVERY OF FIBROUS MATERIAL

Per Anton Naumburg, Djursholm, and Hans Olof Hyden, Stockholm, both of Sweden, assignors to AB Centralsug, Solna, Sweden

Filed Feb. 13, 1973, Ser. No. 332,100
Claims priority, application Sweden, Feb. 25, 1972, 2385/72
Int. Cl. B07c 3/06
U.S. Cl. 209—74 8 Claims



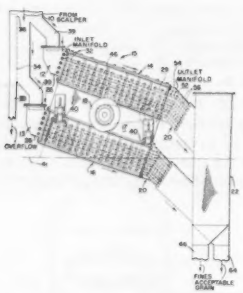
A device for discharging inhomogeneous material such as household garbage from a vacuum conveying system, said device comprising means permitting a lighter fraction of said material substantially comprising fibrous material to be discharged separate from the rest of the material.

3,826,367

GRAIN CLEANER

Louis E. Hubach, Aurora, Ohio, assignor to W. S. Tyler Incorporated, Cleveland, Ohio

Continuation-in-part of Ser. No. 795,260, Jan. 30, 1969, Pat. No. 3,680,697. This application Feb. 23, 1972, Ser. No. 228,684The portion of the term of this patent subsequent to Aug. 1, 1989, has been disclaimed.
Int. Cl. B07b 1/46
U.S. Cl. 209—243 9 Claims



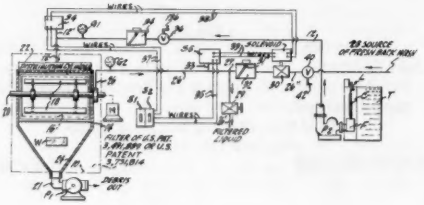
A grain cleaner including, in series, an inlet manifold, vibrating apparatus, an outlet manifold and vertically extending chutes. The inlet manifold includes an opening at the top for receiving a mixture of grain and foreign matter and side walls converging downwardly toward outlets, said manifold being constructed to allow linear flow of said grain from said opening to said outlets. The outlets being located at one side of the inlet manifold near the lower end, each one being constructed to feed a stream of the substantially dry mixture to one of a plurality of superposed screening decks. The mixture flowing through the outlets may be individually regulated by pivotable gates disposed therein to give uniform flows to each deck. Each deck includes a screen superposed over a pan. Whole grains are retained above the screen and fines consisting of foreign matter, broken grains, and undersized grains fall through the pores of the screen onto the pan. A vibrator is operatively assembled to shake the box and its contents at an acceleration of at least three times that of gravity and to exert a throw on the fines which is adequate to cause them to strike the underside of the screen and dislodge any material blinding any of the openings. The outlet manifold includes two outlets from each deck. One outlet is disposed to receive the grain which is retained on the screen. The other outlet is disposed to receive the fines on the pan. A passage in the outlet manifold adjoins each of the outlets and baffles are provided therein to horizontally deflect the grain or fines into different vertically extending chutes. Below the outlet manifold, the chutes are structured to laterally deflect the grain in one direction and the fines in another direction whereby all the grain will empty into a single duct and the fines will empty into another single duct.

3,826,368

LIQUID FILTER SYSTEM HAVING AUTOMATIC FILTER BACK WASH CONTROL AND METHOD OF OPERATION

Theodore M. Walters, Milford, N.J., assignor to Charles H. Brown, Boca Raton, Fla.

Continuation-in-part of Ser. No. 727,842, May 9, 1968, Pat. No. 3,731,814. This application Aug. 9, 1972, Ser. No. 297,213
Int. Cl. B01d 29/38
U.S. Cl. 210—82 11 Claims



A filter for removing solid particles from a fluid in which an inlet supplies the fluid to be filtered to one side of the screen, and an outlet carries away the filtered fluid from the other side of the screen, wherein means are coupled to the outlet responsive to an absolute drop in normal pressure therein below a predetermined amount for introducing a higher pressure back wash into the outlet, and means are coupled to the inlet responsive to an increase in normal pressure in the inlet for terminating the flow of back wash into the outlet.

3,826,369

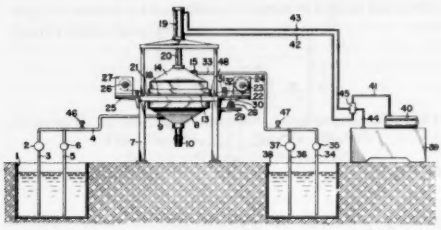
FILTRATION PROCESS AND FILTRATION EQUIPMENT

Kazuo Murata; Hirotaka Ikeda; Katsuzi Ashida, and Uichi Sato, all of Takatsuki, Japan, assignors to Yuasa Battery Company Limited, Hakuhaicho, Tokotsuki City, Osaka and Yuasa Kiko Company Limited, Takatsuki City, Osaka, both of, Japan

Continuation of Ser. No. 159,245, July 2, 1971, abandoned. This application Dec. 18, 1972, Ser. No. 316,424
Int. Cl. B01d 29/02
U.S. Cl. 210—82 5 Claims

This invention provides a filtration process capable of intermittent repetition wherein the prefilt is fed under pressure to one section of a pair of containers compressed to a watertight closure through a filter medium and the filtrate is discharged from another section of said containers, the backwash process wherein the filtrate is fed under pressure in the reverse direction of the filtration process, while said filtration process is suspended, to remove plugging of said filter medium, and the filter medium exchange process wherein said filter medium is moved for replacement by a new one, subsequent to said filtration process and backwash process alternately repeated

predetermined times. This invention relates to a process and equipment which enable one to filter with ease and certainly

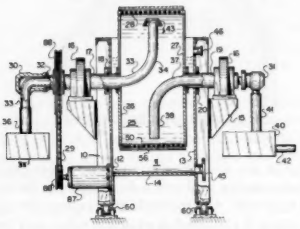


extremely fine particles using the special microporous substance.

3,826,370
ROTARY FILTER APPARATUS HAVING MEANS FOR CONTROLLING THE LEVEL OF FILTRATE

Harry Ball, Piscataway, and Henry A. Steward, Califon, both of N.J., assignors to Technical Fabricators, Inc., Piscataway, N.J.

Filed May 29, 1973, Ser. No. 364,364
Int. Cl. B01d *33/12*
U.S. Cl. 210—109 **14 Claims**



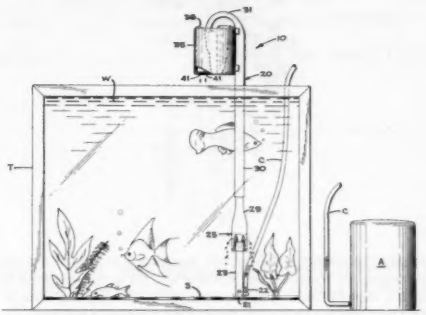
A rotary filter has a rotary drum with a perforated circumferential wall, the drum extending partly into a tank containing a slurry to be filtered. A sheet of a filter medium is wrapped around the circumferential wall. A first standpipe extends into the drum through a hollow bearing shaft from a filtrate pump, for withdrawing filtrate from the drum, and a second standpipe extending into the upper portion of the drum by way of the hollow bearing shaft is connected to a vacuum pump for separately withdrawing air. A weighing device is positioned to provide an output corresponding to the level of the filtrate in the drum, for maintaining this level within a given range by controlling the operation of the filtrate pump for the purpose of separately withdrawing the air and filtrate and prevent them from mixing.

3,826,371
AQUARIUM CLEANING DEVICE

James L. Adamson, 120 Calle Marguerita, Los Gatos, Calif. 95030

Filed Dec. 21, 1972, Ser. No. 317,173
Int. Cl. E04h *3/20*
U.S. Cl. 210—169 **16 Claims**

An aquarium cleaning device comprising a withdrawing tube for removing water along with debris and foreign matter from an aquarium and advancing the removed water into a filter. Openings in the bottom of the filter enable the filtered water to return to the aquarium. The withdrawing tube has a reduced diameter inlet opening disposed in the aquarium for increasing the speed of the withdrawal of water with debris and foreign matter into the withdrawing tube. Air is supplied to the withdrawing tube for the removing of water with debris and foreign matter from the aquarium and for advancing the removed water through the withdrawing tube into the filter.

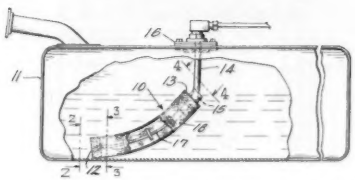


Spaced from and above the inlet opening, the withdrawing tube includes an increased diameter portion or a deceleration chamber to cause sand and objects of greater density advancing from the inlet opening of the withdrawing tube to fall back into the aquarium through openings in the wall thereof rather than advance to the filter.

3,826,372
FLEXIBLE FILTER

Rupert B. Bell, Grosse Point Park, Mich., assignor to R. L. Kuss & Co., Inc., Findlay, Ohio

Filed June 14, 1973, Ser. No. 370,017
Int. Cl. E03b *1/00*
U.S. Cl. 210—172 **8 Claims**



The invention is a flexible fuel filter for use, for example, in an automotive fuel tank. The filter depends from an obliquely angled outlet tube and is flexed against the tank bottom, so that the lower end of the filter is maintained in forced contact with the tank bottom to assure pick-up of fuel at the lowest level. A bias wrapped filter mesh serves as a flexible sleeve which is sealingly retained by an interior flexible spool including a closure on one end and means for attachment to the outlet tube on the other end.

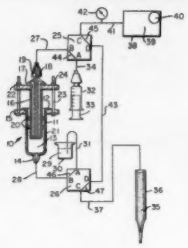
3,826,373
LIQUID CHROMATOGRAPHY APPARATUS

Raymond E. Andreotti, Hopedale, Mass., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 3, 1973, Ser. No. 347,601
Int. Cl. B01d *15/08*
U.S. Cl. 210—198 C **5 Claims**

A liquid chromatography apparatus comprising a liquid sample measuring and feeding device adapted for use in feeding a liquid sample of a measured volume to a chromato-

graphic fractionating column, the device comprising a syringe-like means for measuring the sample, and a pair of four-way valves for controlling the flow of the sample to the syringe-like



measuring means and from the measuring means to the chromatographic fractionating column and for controlling the flow of the mobile liquid phase employed in driving the sample to and through the chromatographic fractionating column.

3,826,374

APPARATUS ENABLING THE SHIFTING OF GROUPS OF FILTER PLATES IN A FILTER PRESS

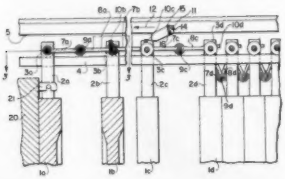
Oswald Busse, and Hugo Klesper, both of Aarbergen, Germany, assignors to Passavant-Werke Michelbacher Hutte, Aarbergen, Germany

Filed May 24, 1973, Ser. No. 363,552

Claims priority, application Germany, June 2, 1972, 2226957

Int. Cl. B01d *25/32*

U.S. Cl. 210—225 **16 Claims**



Adjacent filter plates of a filter press are connected by links permitting the plates to close and separate. Some plates have a cam thereon which moves between an operative position and a neutral position, moving to the former position in response to movement of its associated links to a filter plate separated condition. An engaging dog moves along the filter press, engaging an operative cam to move at least one but preferably a group of filter plates to an open, separated condition.

3,826,375

LIQUID-SOLIDS CONTACTING CHAMBER WITH SPHERICAL STRAINER MEANS

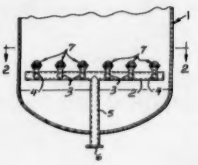
Paul W. Fournier, New Brighton, Minn., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 163,847, July 19, 1971, abandoned. This application July 20, 1973, Ser. No. 381,294

Int. Cl. B01d *35/28*

U.S. Cl. 210—291 **4 Claims**

A liquid-solids contacting chamber using a plurality of slotted ball-form strainer-nozzle members to effect the withdrawal and/or distribution of liquid from, or into, the contacting chamber. The plurality of members are utilized as part of the liquid manifold or pipe header system and are of particular advantage over present types of cylindrical form members in that they can provide greater resistance to external



crushing pressures, as well as provide more optimum backwash flow patterns in the chamber.

3,826,376

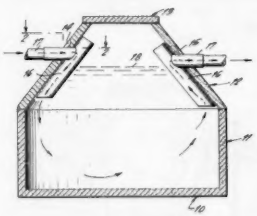
SEPTIC TANK CONSTRUCTION

Andrew L. Carlson, and John R. Pinezich, both of Northport, N.Y., assignors to Andrew Carlson & Sons, Inc., Kings Park, N.Y.

Filed Aug. 20, 1973, Ser. No. 389,872

Int. Cl. C02c *1/14*

U.S. Cl. 210—519 **5 Claims**



Septic tanks are described comprising a receptacle portion having an upstanding wall and a dome open at its top and supported on said wall. A removable slab covers the open end of the dome which is provided at opposite sides with baffled inlet and outlet means so constructed and arranged as to direct the sewage in an arcuate path from the inlet means to the outlet means while keeping turbulence to a minimum.

3,826,377

FIXTURE FOR HOLDING SEMICONDUCTOR DISCS DURING DIFFUSION OF DOPING MATERIAL

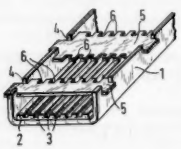
Gerhard Bachmann, Muenchen, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 13, 1972, Ser. No. 262,353

Claims priority, application Germany, July 7, 1971, 2133876

Int. Cl. A47g *19/08*

U.S. Cl. 211—41 **3 Claims**



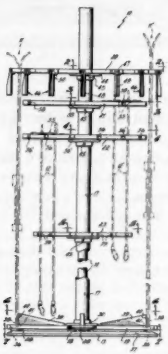
A fixture for retaining semiconductor discs during diffusion with a doping material including a hollow member with base and sidewalls, and a base plate located on the base of the hollow member with grooves therein for receiving the semicon-

ductor discs in standing relation, in combination with retainer means extending between the sidewalls, the retainer means having slots therein for embracing the semiconductor discs in edge contact at a level which is at least as high as the center of gravity of the discs.

3,826,378
SKI RACK

Warren D. Novak, 325 Douglas Rd., Chappaqua, N.Y. 10514

Filed Dec. 10, 1971, Ser. No. 206,646
Int. Cl. A47b *49/00*; A47b *81/00*
U.S. Cl. 211—60 SK **28 Claims**



A rotary ski rack for high density storage of multiple pairs of skis and ski poles. The rack is so arranged and configurated that each pair of skis and the associated pair of ski poles are stored in the same sector of the rack and the skis lock the associated poles in the rack.

3,826,379
METHOD AND MEANS FOR REDUCING THE EFFECT OF ELECTROSTATIC CHARGES ON PAPER IN A COPYING SYSTEM

Wayne E. Wright, 167 Wooded Ln., Villanova, Pa. 19085

Filed Feb. 28, 1973, Ser. No. 336,816
Int. Cl. B65h *31/02*
U.S. Cl. 271—208 **6 Claims**

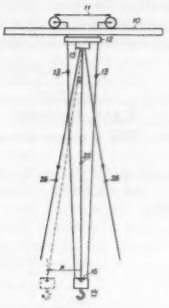
The present device provides a means to remove electrostatic charges from one side of a sheet of paper and means to provide a ground plane so that the remaining charges are attracted to the ground plane which causes the sheets of paper to stack without "floating."

3,826,380
ARRANGEMENT IN CRANES TO DETERMINE THE DEVIATION OF THE HOISTING DEVICE OF THE CRANE FROM A DEFINED VERTICAL LINE

Bo Lenander, and Bernt Ling, both of Vasteras, Sweden, assignors to Almanna Svenska Elektriska Aktiebolaget, Vasteras, Sweden

Filed Apr. 12, 1973, Ser. No. 350,623
Claims priority, application Sweden, Apr. 14, 1972, 4859/72
Int. Cl. B66c *19/00*
U.S. Cl. 212—125 **12 Claims**

To determine the deviation of the hoisting device of a crane from a vertical line, a light emitting arrangement is placed on the crane which emits a wide beam of light downwardly. Within this beam, the hook or other hoisting device has an upwardly directed reflector. There is also on the crane a detector unit which receives the light reflected from the reflector and

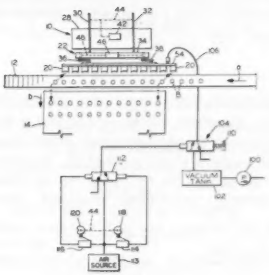


emits a signal which indicates the deviation of the hoisting device from the vertical.

3,826,381
ARTICLE HANDLING APPARATUS

Constantine W. Kulig, Windsor, Conn., and Lyman L. Campbell, East Longmeadow, Mass., assignors to Emhart Corporation, Bloomfield, Conn.

Filed Mar. 30, 1972, Ser. No. 239,643
Int. Cl. B66c *1/02*
U.S. Cl. 214—1 BT **12 Claims**

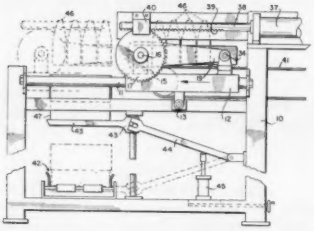


An article handling apparatus which is used to transfer a plurality of articles, such as glass containers which may be in a heated condition, from a pickup position which may be over a first conveyor to a discharge position which may be over a second conveyor employs a plurality of vacuum pickup heads mounted on a movable carriage. A drive mechanism connected to the carriage moves the plurality of pickup heads into laterally adjacent and embracing relationship with the articles at the pickup position so that one article is embraced in each of the respective heads. The drive mechanism then raises the carriage and the embraced articles so that they are held in a suspended condition and moves the carriage from the first conveyor to the discharge position where the articles are lowered onto the second conveyor. As the carriage lowers the embraced articles, the source providing the vacuum is disconnected from the plurality of heads and the articles are deposited at the discharge position.

In order to minimize the capacity of the vacuum system, each of the plurality of vacuum pickup heads contains a valve and an actuating element which opens the valve to produce a localized vacuum within the head when an article to be embraced is located in closely spaced relationship with the head. The drive means for moving the plurality of heads on the car-

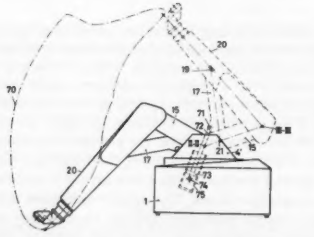
riage sweeps the heads at the appropriate time into closely spaced relationship with the articles as they move along the first conveyor. When the actuating elements of the valves are contacted by the articles, the valves open and the full effect of the vacuum source is available to draw the articles into embracing relationship with the pickup heads.

3,826,382
CASE PACKER
Anthony T. Zappia, 7576 Ivywood Dr. Apt. A, Indianapolis, Ind. 46250
Filed Jan. 4, 1973, Ser. No. 321,003
Int. Cl. B65b *21/22*
U.S. Cl. 214—1 BB **6 Claims**



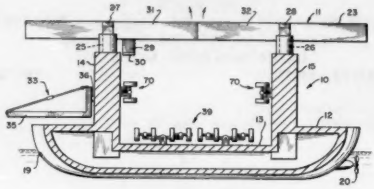
A case loader, particularly for glassware, including a gripper assembly comprising a plurality of parallel arms each including an expansible diaphragm distendable toward a similar diaphragm on an adjacent arm, and a motor for moving the gripper assembly between a ware receiving station and a ware delivering station either by rectilinear motion or by arcuate motion.

3,826,383
AUTOMATIC HANDLING APPARATUS
Hans Richter, Augsburg, Germany, assignor to Keller & Knappich Augsburg, Zweigniederlassung der Industrie-Werke Karlsruhe Ausberg Aktiengesellschaft, Augsburg, Germany
Filed May 25, 1973, Ser. No. 365,641
Claims priority, application Germany, May 31, 1972, 2226407
Int. Cl. B66c *1/10*
U.S. Cl. 214—1 BD **10 Claims**



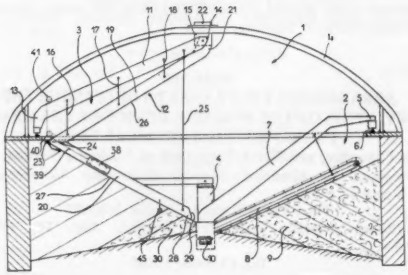
A mechanical handling apparatus controlled by a recorded but variable program has a rotatable base. An upper arm is pivoted on the base. A forearm is pivoted on the upper arm, and a wrist movement and gripper are pivoted on the end of the forearm. Each part subject to rotary motion is driven by an epicyclic gear located as near as possible to the part to reduce slack or backlash. Each gear is driven through belts and bevel gears by an electric motor located in the base. The program is pre-recorded and all movements of the apparatus when in use generate signals which are compared with the program, which thus controls the motor drives.

3,826,384
CARGO TRANSFERRING VESSEL AND METHOD
Robert F. Cecce, 8320 Verona Dr., New Carrollton, Md. 20784
Filed Aug. 7, 1972, Ser. No. 278,231
Int. Cl. B65g *67/58*
U.S. Cl. 214—13 **9 Claims**



A cargo transferring vessel and method for transferring cargo between a small ship or lighter and a larger ship. The cargo transferring vessel is capable of being partially submerged to various depths to permit a large ship to float over the center portion of its hull and is then capable of increasing its buoyance to bring wheels of wheel assemblies on the center portion of its hull into contact with the hull of the larger ship to eliminate relative pitching, rolling and up and down movements between the larger ship and the cargo transferring vessel which might be caused by waves or rough water. A stabilizing apparatus is provided on the side of the hull of the cargo transferring vessel for exerting a downward force on the hull of the smaller ship for assisting in preventing relative movement between the smaller ship and the combined cargo handling vessel and the larger ship. The wheel assemblies are capable of conforming to the shape of the hull of the larger ship and they permit the cargo transferring vessel to be located at various positions along the hull of the larger ship. The cargo transferring vessel and method permit the transfer of cargo between a large and a small ship without the undesirable pitching, rolling and up and down movements between the large ship, the smaller ship and the cargo transferring vessel.

3,826,385
SILO FILLING ARRANGEMENT
Rene Bluntzer, Thann, France, assignor to Ameco S.A., Kingerskeim, France
Filed May 6, 1971, Ser. No. 140,775
Claims priority, application France, May 6, 1970, 70.16467
Int. Cl. B65g *65/32*
U.S. Cl. 214—17 CA **13 Claims**



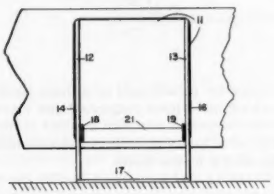
This invention relates to a device for discharging loose materials or bulk products, notably for a rotary scraper, which comprises a conveyor duct to which a movement of rotation

identical with that of said scraper is imparted, and of which at least one section comprises movable discharge means adapted to move along said section in the axial direction thereof. With this arrangement the head or height of fall of the materials to be discharged is reduced considerably so that the detrimental emission of dust is safely avoided. Furthermore, this device facilitates the storage by successive layers of the materials in view of its subsequent homogenization (FIG. 1).

3,826,386
COMPACT LIFT FOR VAN

Kenneth A. Tauer, 9801 W. Robin Oak Rd., Tucson, Ariz. 55343

Continuation-in-part of Ser. No. 322,732, Jan. 11, 1973, abandoned. This application Mar. 30, 1973, Ser. No. 346,349
Int. Cl. B60g *1/48*
U.S. Cl. 214—77 R **5 Claims**



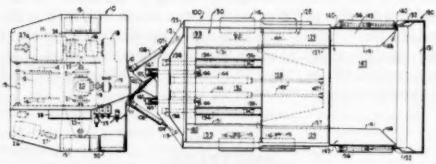
An electrically-operated lift platform is provided for insulation at the side or rear door of a van-type passenger/cargo automobile body. The platform is long enough to accomodate a wheel chair. The platform sides are connected to two linkage mechanisms, secured to the body inside the van at the top and sides of the door opening. The lift, in operation, moves between a position flat on the ground outside the door to a position level with the van floor, keeping horizontal during travel between these positions. The lift also can be moved from the floor position to a storage position in which the lift platform is vertical and entirely within the van, so that the van doors can be closed, when the lift is entirely concealed from outside view.

In a first embodiment the lift is operated electrically, and in a second, hydraulically.

3,826,387
IMPROVED SELF-LOADING AND SELF-PROPELLED HAULAGE VEHICLE

Alex J. Galis, Heatherbrae Square, Apt. 101, Indiana, Pa. 15701

Filed Oct. 15, 1971, Ser. No. 189,512
Int. Cl. B60p *1/00*
U.S. Cl. 214—90 **11 Claims**

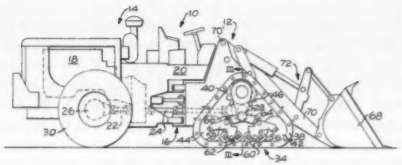


An improved, self-loading self-propelled loading haulage vehicle, for hauling loose mined material, such as coal, in an underground mine or the like. The haulage vehicle comprises prime mover means operably connected to a trailer having a material haulage compartment that includes a fixed, or stationary, hopper portion having mounted therewith one or more selectively movable hopper portions whereby the effective length, and hence hauling capacity, of the haulage vehicle may be varied, and whereby rapid loading and unloading of the vehicle is obtained. In one embodiment, the trailer means includes a fixed hopper portion having mounted thereon front and rear movable hopper portions which may be selectively positioned during loading and unloading of the haulage vehicle. Each of the hopper portions is channel-shaped and includes spaced-apart vertical sidewalls transversely interconnected by a bottom plate portion. The movable front hopper includes pivotally mounted at the end thereof a loading and holding gate means adapted to pivot to an open position during vehicle loading or unloading and to a closed position during loaded vehicle travel. Further provided is a cleaner plate within the trailer means adapted to travel the length of the fixed hopper portion whereby the hopper contents may be dumped, or discharged therefrom.

3,826,388
WHEEL/TRACK LOADER

Dorrance Oldenburg, Peoria, and James Robert Sturges, Washington, both of Ill., assignors to Caterpillar Tractor Co,, Peoria, Ill.

Filed Aug. 16, 1971, Ser. No. 171,916
Int. Cl. E02f *3/00*
U.S. Cl. 214—140 **1 Claim**

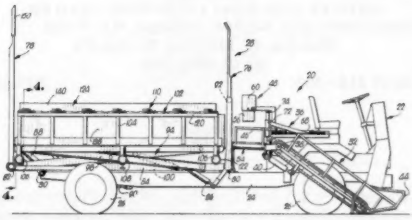


A loader vehicle rides on a set of track assemblies and a set of wheels and is articulated at the mid-point between the wheel assembly and the track assembly.

3,826,389
BALE HANDLING MACHINE

Vern L. Godfrey, and Bill D. Clark, both of Rt. 4, Warrensburg, Mo. 64093

Filed July 24, 1972, Ser. No. 274,337
Int. Cl. B65g *57/28*
U.S. Cl. 214—152 **8 Claims**



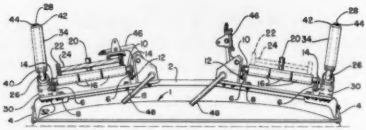
A mobile bale handling machine picks up successive bales in the field and directs the same rearwardly into a receiver in which a stacked load of the bales is formed from the bottom up by virtue of a pusher in the receiver which raises successively formed tiers of the bales to holding structure located above the tier-forming level of the receiver. Upon completing the formation of the stacked load, the receiver may be tilted about a horizontal axis to swing the tiers of the load into an

upright disposition, whereupon the same pusher used to build the load may be employed to displace the load of bales through the open top of the receiver as a stack. Upstanding load-retaining forks of the receiver may be inclined as the receiver is tilted in order to give the receiver a canted appearance for overhead clearance. The stack may subsequently be retrieved by virtue of the ability of the retaining forks to operate independently of one another for maneuvering under and over the stack and for clamping the same within the receiver for subsequent tilting to a transport position.

3,826,390
RACK FOR ATTACHMENT TO THE TOP OF A VEHICLE

Clyde W. Watson, 1916 S.E. 6th Ave., Mineral Wells, Tex. 76067

Filed Aug. 7, 1972, Ser. No. 278,581
Int. Cl. B60r *9/00*
U.S. Cl. 214—450 **5 Claims**

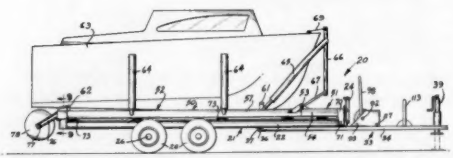


A rack for attachment to the top of a vehicle, on which rack elastomer elements receive the ladder or other elements being hauled. The rollers of which rolling element are positioned on a longitudinal shaft along the side the side of the vehicle top and on a lateral shaft on each end of the rack to enable a ladder, boards, pipe or like elongated material to be readily loaded onto the rack without injury thereto or to the top of the vehicle, and enables such material to be hauled. A special feature is the provision of a projection which may extend upward between the rungs of a ladder to prevent longitudinal movement of the ladder. Furthermore, a clamping device is provided to prevent longitudinal movement of a ladder and/or other material being hauled. An upstanding corner shaft, having an elastomer roller journaled thereon is provided on the rack, near the distal end thereof, which enables an element, being hauled, to be moved thereaganist in rolling relation with the roller thereon, so as to expedite the work involved in loading the rack. The rack is removable and replaceable. The elastomer rollers provide a cushion between the ladder and/or other material being hauled and the mounting frame on the vehicle so as to prevent damage to the ladder or other material being hauled to prevent shock to the vehicle.

3,826,391
ARTICULATED BOAT LAUNCHING TRAILER

Amos C. Prince, P.O. Box 894, Goldsboro, N.C. 27530

Filed Dec. 15, 1972, Ser. No. 315,374
Int. Cl. B60p *3/10*
U.S. Cl. 214—506 **8 Claims**

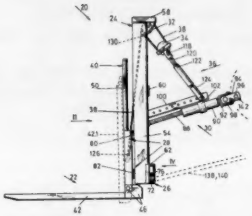


Apparatus for transporting, launching and retrieving boats or other marine vehicles including a trailer having telescoping frames and with one of such frames being articulated in a generally vertical direction to follow the contour of a launching ramp or the bottom of a body of water.

3,826,392
LIFTING DEVICE

Brian Farley, 9 Struben Rd., Claremont, South Africa

Filed May 1, 1973, Ser. No. 356,190
Int. Cl. B60f *9/20*
U.S. Cl. 214—672 **12 Claims**

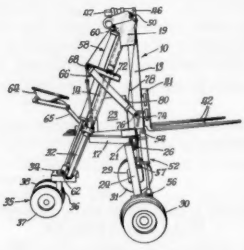


A lifting device for attachment to a three-point tractor lift mechanism which has a mast supported and elevated by two links. A flexible member is attached to a link connected to the mast such that elevation of the mast causes elevation of a carriage movably guided by the mast.

3,826,393
SELF-PROPELLED UNLOADER

Henry F. Carroll, Cary, Ill., assignor to John Barchard, Crystal Lake, Ill., a part interest

Filed Mar. 28, 1973, Ser. No. 345,742
Int. Cl. B66f *9/20*
U.S. Cl. 214—674 **3 Claims**



A self propelled unloading vehicle having an adjustable and articulated lightweight compact frame enabling the vehicle to carry tremendous loads in a stable manner and with the center of gravity shiftable to a position between the front and rear wheels of the vehicle during the raising of the load. The unloader is capable of lifting loads from a raised bed, such as the bed of a truck, and then by telescoping certain frame members and angularly adjusting other frame members the load is, in effect, rocked off the raised bed without fear of losing the load by tipping during transport of the load.

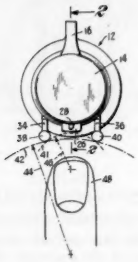
3,826,394
SAFETY CAP

Morton Stull, 221-223 Banta Ave., Garfield, N.J. 07026

Filed Dec. 19, 1972, Ser. No. 316,480
Int. Cl. A61j *1/00;* **B65d** *55/02*
U.S. Cl. 215—9 **11 Claims**

A safety cap construction comprising a pouring-spout type fitment and a closure cap attachable to and removable from

the fitment. The cap has a protruding finger piece by which a user can pry it off, using the fingers. The fitment has spaced-apart guard members disposed in a forward location, which straddle the finger piece of the cap when the latter is in place. The finger piece and the two guard members define a hypothetical arc which, due to the closeness and the positioning of the members, has a radius that is shorter than the radius of the arc defined generally by the front teeth of a human being, to the end that a person such as a small child cannot em-



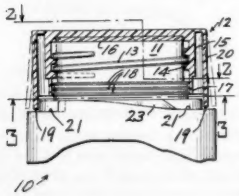
ploy his teeth against the finger piece to force the cap off of the fitment. However, the spacing between the guard members is still great enough to admit a user's finger for access to the finger piece for the purpose of removing the cap from the fitment by finger pressure. The cap and fitment are permanently connected to each other by a thin flexible web which insures that the finger piece will always be urged to a central location between the guard members when the cap is being replaced on the fitment after use.

3,826,395

LEAK-PROOF CLOSURE FOR A LIQUID CONTAINER

Gary Van Montgomery, Evansville, Ind., assignor to Sunbeam Plastics Corporation, Evansville, Ind.

Filed May 3, 1973, Ser. No. 356,913
Int. Cl. A61j 1/00; B65d 55/02
U.S. Cl. 215—9 **11 Claims**



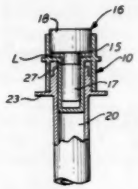
A leak-proof closure for a liquid container having a threaded neck. A cap for the closure has internal threads which mate with those on the container neck. The cap has an annular skirt portion above or below the threaded section. The container neck has at least one annular sealing ring on its outer surface at such a level that the cap skirt portion fits circumjacent the ring when the cap is threaded onto the neck into closed position. The outer diameter of the ring and the inner diameter of the cap skirt are such that an interference fit therebetween is established. Preferably the sealing ring or rings have a sharp edge in order to provide substantially a line contact with the skirt portion. In a preferred and illustrated embodiment, co-operating means are provided on the cap and the container to make the closure child-proof.

3,826,396

DOUBLE SEAL CLOSURE PLUG

James J. Frassica, South Glens Falls, N.Y., assignor to C. R. Bard, Inc., Murray Hill, N.J.

Filed Oct. 31, 1972, Ser. No. 302,441
Int. Cl. B65d 41/24
U.S. Cl. 215—234 **12 Claims**



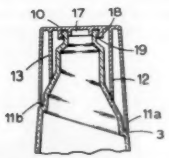
A closure plug for a tubular opening as in the neck of a receptacle or at the end of a conduit, wherein a plug portion enters the opening with a close fit to constitute a mechanical seal, while an outer skirt portion of the plug forms an annular enclosed recess about the exterior of the opening, an axially movable piston in the top of the plug being forced into a cylindrical chamber in the plug to drive a quantity of sealing (sterilizing) liquid from said chamber into the recess to form a liquid barrier seal around the exterior of the opening, the lip of the opening being thus enclosed externally and internally.

3,826,397

BOTTLE CLOSURE

Herbert Ashley Atkins, Maidenhead, England, assignor to Beecham Group Limited, Brentford, England

Filed May 19, 1972, Ser. No. 254,922
Claims priority, application Great Britain, May 20, 1971, 16052/71
Int. Cl. B65d 41/06, 41/22
U.S. Cl. 215—41 **5 Claims**

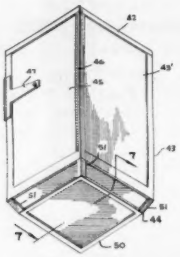


A cap-sealed bottle wherein the shoulder of the bottle commences inwards from the top of the bottle, leaving a peripheral ledge, the shoulder and the upper region of the body are elliptical and the shoulder portion is longer on one side than the other, the shoulder joining the body of the bottle to the neck of circular cross-section; and the cap comprises a hollow cup-shaped member having a downwardly-extending skirt, a snap-lock liquid-tight sealing arrangement internal of the skirt and at least one internal rib adapted to ride over the shoulder and which rib also serves as a guide means to position the cap on the bottle.

3,826,398
TRANSPORT CONTAINER

William C. Rivers, Jr., 2848 Village Grove Dr., Jacksonville, Fla. 32217

Division of Ser. No. 48,662, May 15, 1970, Pat. No. 3,695,471, which is a division of Ser. No. 808,531, March 19, 1969, Pat. No. 3,561,621. This application May 12, 1972, Ser. No. 252,723
Int. Cl. B65d *87/00*
U.S. Cl. 220—1.5 4 Claims

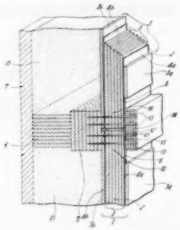


A transport vehicle having a load bed with upstanding guides defining container positions on the bed, and containers including a skeletal bottom suction having downwardly converging corners to provide a guide for automatic orienting at the container positions. The vehicle has an after deck carrying a load handling machine for loading and unloading containers, with a pivoted machine loading ramp pivotally mounted on the after deck and movable to and from loading position by the load handling machine.

3,826,399
LOW TEMPERATURE LIQUIFIED GAS STORAGE TANK

Tetsuo Noma; Koji Hayakawa; Osamu Nagao; Ichizo Okano; Ryuzo Teramoto; Tomomichi Kurihara; Kenji Nakano, and Tomiyasu Okamoto, all of Osaka, Japan, assignors to Hitachi Shipbuilding and Engineering Company, Ltd., Osaka, Japan

Filed July 6, 1972, Ser. No. 269,489
Claims priority, application Japan, July 9, 1971, 46-50830
Int. Cl. B65d *25/26, 87/34*
U.S. Cl. 220—15 3 Claims

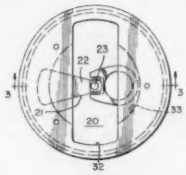


A low temperature liquified gas storage tank having an outer shell and an inner wall formed by a plurality of multilayer panels, each panel including at least one interior liquid-tight membrane layer protected from excessive thermally induced stresses by an exterior heat shock absorbing layer of plywood or fibrous material which forms the inner wall surface of the tank. A symmetrical arrangement of the membrane layer or layers with respect to the cross-sectional center of the panel prevents warping thereof under thermally induced stress.

3,826,400
SAFETY OVERCAP FOR EASY OPENING CONTAINER

Gary A. Hougen, Palatine, and Henry F. Kloc, Plainfield, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Aug. 31, 1972, Ser. No. 285,161
Int. Cl. B65d *51/18*
U.S. Cl. 220—29 5 Claims

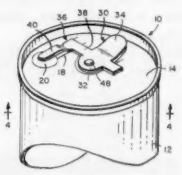


A safety overcap for an easy opening container having an end closure with a tear portion defined by a score line and a pull tab secured to the tear portion by an integral rivet. The overcap includes a panel and a peripheral flange adapted to be detachably snap fitted over the seam of the container. The overcap is formed with a slot having co-acting pull tab for removing the tear strip and a position permitting tilting of the pull tab.

3,826,401
CONTAINER OPENING MEANS

Arthur P. Zundel, Chicago, Ill., assignor to National Can Corporation, Chicago, Ill.

Filed Jan. 26, 1973, Ser. No. 326,970
Int. Cl. B65d *39/00*
U.S. Cl. 220—47 8 Claims



A container end panel is formed with a lever member having a first end, a second end and an offset portion which serves to expose a dispensing opening in the panel when the lever is rotated. The panel is provided with first and second weakened lines which respectively enable the dispensing opening to be formed and the lever to rotate. The front end of the lever is in turn connected to a hinge formed in the end panel by means of the second weakened line.

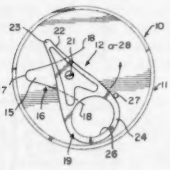
3,826,402
NON-DETACHABLE EASY OPENING CONTAINER

Gary A. Hougen, Palatine, and Henry F. Kloc, Plainfield, both of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Filed Aug. 3, 1972, Ser. No. 277,722
Int. Cl. B65d *17/00*
U.S. Cl. 220—48 7 Claims

An easy opening container including a can body and an end closure. The end closure is provided with a tear portion defined by a score line terminating in spaced ends. An opening tab is attached to the tear portion and is provided with a rigid nose complementary to the contour of the score line for depressing the tear portion inwardly to provide a pour open-

ing. The opening tab is arranged for pivotal movement in a generally horizontal plane between a position in which the

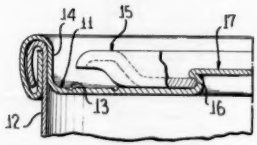


nose is out of alignment with the score line to prevent inadvertant opening and a position in which the nose is in alignment with the score line for opening the container.

3,826,403
EASY OPENING END

Christian Enjolras, Pavillons-S-Bois; Pierre Gautier, Ville-D Avray, and Emile Billy, St-Cloud, all of France, assignors to Etablissements J. J. Carnaud & Forges De Basse-Indre, Paris, France

Division of Ser. No. 191,731, Oct. 22, 1971, Pat. No. 3,781,972. This application Jan. 15, 1973, Ser. No. 323,718
Int. Cl. B65d *17/20*
U.S. Cl. 220—54 **3 Claims**

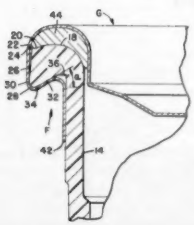


This invention relates to the attachment of a pull tab to an easy opening end for cans and like receptacles by means of a novel rivet formation wherein the head of the rivet is of a thickness substantially approaching the original thickness of the material of the end. The rivet is formed in two punching steps each employing a flat headed punch.

3,826,404
MOLDED PLASTIC PAIL

Edgar R. Rowe, Cleveland, and William R. Fox, Brecksville, both of Ohio, assignors to Van Dorn Company, Cleveland, Ohio

Continuation of Ser. No. 27,462, April 10, 1972, abandoned. This application Mar. 1, 1972, Ser. No. 231,012
Int. Cl. B65d *7/42*
U.S. Cl. 220—70 **4 Claims**

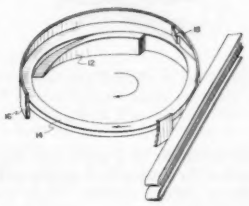


A molded plastic pail for storing liquids or the like having an open top end, a closed bottom wall and a side wall which extends upwardly therefrom, the pail including a bead integrally formed at the outer circumference on the open end to act as a retainer for maintaining a lid in sealing relationship with the pail wherein the bead has a downwardly extending tapered lip. The pail further contains two integrally molded bale receivers to maintain a bale in position to provide carrying means, the receivers including side portions extending longitudinally along the side wall for use in combination with a nesting ring for determining a nested position of one pail inside another. The bottom wall is recessed within the side wall and contains an integrally molded downwardly extending abuttment element to control the flexing of the bottom when a filled pail is subjected to a sudden jarring or the like.

3,826,405
METHOD OF ORIENTING ARTICLES

Kurt H. Hoppman, Falls Church, Va., and George W. Edmunds, Derwood, Md., assignors to Hoppmann Corporation, Springfield, Va.

Filed June 20, 1972, Ser. No. 264,636
Int. Cl. B23q *7/12*
U.S. Cl. 221—1 **19 Claims**

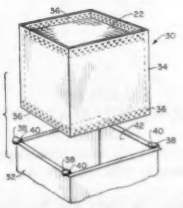


Method of orienting articles which have a configuration consisting of a shank and a head including rotating the parts upon an inner plane so as to distribute them centrifugally, guiding the parts from the inner plane upwardly onto a rotating outer rim which aligns the parts in single file, gating exit of the particles from the rim and radially orienting the articles so as to place them in side by side relationship while tangentially guiding the articles away for pakcaging, counting or the like.

3,826,406
ARTICLE DISPENSER

Vincent E. Moniot, 5919 Hanna Ave., Woodland Hills, Calif.

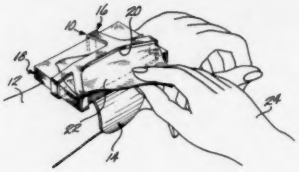
Continuation-in-part of Ser. No. 40,225, May 25, 1970, abandoned. This application Mar. 23, 1972, Ser. No. 237,294
Int. Cl. B65h *1/12*
U.S. Cl. 221—58 **4 Claims**



A dispenser primarily for dispensing articles such as pad-like sponges or cylindrical absorption articles used mainly in the field of medicine, dentistry and veterinary medicine wherein an enclosed chamber is employed to contain a plurality of articles with one side open thereof to permit removal of an article, a restrictive material secured to the interior of the

open end which permits removal of a single article while tending to prevent removal of a plurality of articles. The dispenser may include a spring biased platform which biases the articles toward the open end.

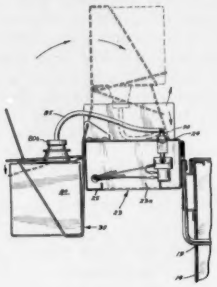
3,826,407
END WRAP DISPENSER
James L. Keating, Seattle, Wash., assignor to Paris American Corporation, Seattle, Wash.
Filed July 12, 1972, Ser. No. 271,030
Int. Cl. A45d *44/00*
U.S. Cl. 221—63 **7 Claims**



A dispenser attachable to a user's arm adjacent the wrist forms a receptacle for a plurality of superposed sheets of nonwoven, absorbent fibrous material. These sheets are commonly known in the art of cosmetology as end wraps. The dispenser has a base portion integral with two downwardly extending resilient flanges which conform to the shape of the arm adjacent the wrist. A plurality of sidewardly extending arms is attached to the base portion. Tongue members connected to the ends of the arms mate with slots provided in the base portion. The arms generally extend in four directions at right angles to each other to form part of a bottom surface for the receptacle. Upwardly extending arms are attached to the sidewardly extending arms. Flanges, which are connected to the upwardly extending arms, extend above the bottom surface of the receptacle. The flanges are spaced from the surface in a generally parallel relationship. The flanges are paired and are connected to each other. A reinforcing arm inter-connects the pairs of connected flanges. The four upwardly extending arms are positioned along the sides of a rectangular pattern to form a receptacle for the plurality of superposed sheets. The upwardly extending arms are spaced to provide easy access to the top sheet of the plurality of superposed sheets to assist in removal of the top sheet without disturbing the next subjacent sheet.

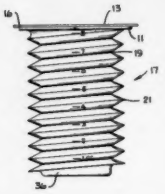
3,826,408
GRAVITY FLOW PORTABLE LAUNDRY LIQUID DISPENSER
Alvin W. Berndt, 613 111th Ave., Minneapolis, Minn. 55434, and Alex Freyberger, 936 Parker Ave., Roseville, Minn. 55113
Filed June 29, 1973, Ser. No. 374,916
Int. Cl. D06f *29/00*
U.S. Cl. 222—70 **4 Claims**

A portable apparatus comprising a laundry liquid dispenser used in connection with a washing machine delivering by gravity laundry liquids in controlled amounts to a washing machine comprising means for automatically dispensing said laundry liquids in a predetermined order and controlling the quantity of each of said laundry liquids delivered to said washing machine and controlling the interval of time between the



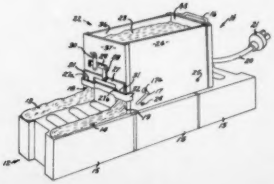
passage of each of said laundry liquids to said washing machine and means substituting a manual operation.

3,826,409
LIQUID DOSAGE DISPENSER
Elmer F. Chilcoate, 318 St. Carr Rd., Plainfield, Ind. 46113
Filed June 25, 1971, Ser. No. 156,845
Int. Cl. B65d *35/08*
U.S. Cl. 222—107 **10 Claims**



A small plastic container having a built-in foldable straw and a built-in receptacle for the folded straw includes a bellows-type wall with an integral in-wall plastic spring, and includes a flanged upper face with a gummed identification label thereon having an integral sleeve encircling a portion of the straw to facilitate erection of the straw for dispensing of contents by collapsing the bellows or accordian wall, using thumb or finger pressure.

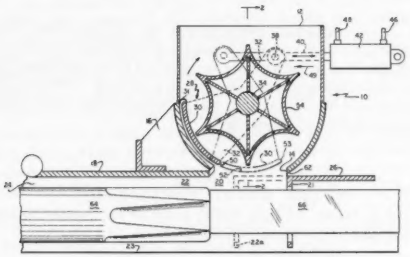
3,826,410
ELECTRIC MORTAR SPREADER
Warren H. Meyer, Rt. No. 1, Box 16, Atlanta, Mich. 49709
Filed Dec. 18, 1972, Ser. No. 316,439
Int. Cl. A01c *19/00*
U.S. Cl. 222—178 **4 Claims**



An electric mortar spreader having a mortar container which is movable on anti-friction rollers and having a rear-

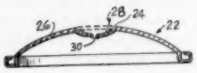
wardly inclined chute bottom. A pair of apertures through the rear wall of the container are gated to meter the flow of mortar therethrough. A lever is provided through the container operating two flapper valve elements selectively opening and closing ports through the bottom of the container and serving the apertures simultaneously. The lever is spring biased to close the ports on release of the lever and the lever actuates a normally open electrical switch. The electrical switch, when closed, permits electrical current to flow through a vibrator element secured beneath the inclined bottom of the container. The vibrator is suspended to impart oscillations to the container at the rear thereof and immediately beneath the floor or bottom adjacent the ports. A guide is secured to the side of the container and is selectively movable to depend below the lower line of block.

3,826,411
CONCRETE SLAB FORMING MACHINE WITH HIGH EXTRUSION CAPACITY
Arvids Kalns, 541 Central Ave., Albany, N.Y. 12206
Filed Jan. 26, 1973, Ser. No. 327,209
Int. Cl. G01f *11/02*
U.S. Cl. 222—235 **2 Claims**



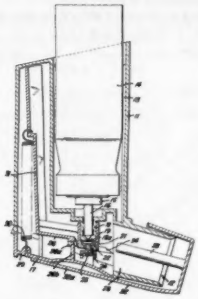
During a ram stroke, a ram plate forces a concrete mix from a ram chamber into a slab forming cavity and a gate member closes to isolate the ram chamber from a supply hopper. The supply hopper includes a rotary feeder having a hypocycloid cross section for transporting the concrete mix through the hopper to the ram chamber.

3,826,412
PRESSURE RELEASE VALVES FOR AEROSOL CANS
Raymond H. P. Kneusel, Flourtown, Pa., assignor to Crown Cork & Seal Company, Inc., Philadelphia, Pa.
Continuation-in-part of Ser. No. 199,929, Nov. 18, 1971. This application July 26, 1972, Ser. No. 275,370
Int. Cl. B65d *83/14*
U.S. Cl. 222—397 **20 Claims**



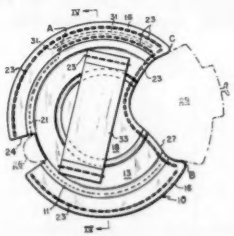
A pressure release valve is located in the domed bottom of an aerosol can. A centrally located area in the domed bottom having a lesser resistance to eversion than the peripheral area in the domed bottom includes several score lines which meet at a common point in a spoke-like configuration. The centrally located area of the bottom will evert at a pressure of 170 to 200 p.s.i. so as to rupture the bottom at the source lines before any substantial eversion of the peripheral area occurs.

3,826,413
DEVICE FOR DISPENSING FLUIDS
William Edward Warren, Cuffley, England, assignor to Bespak Industries Limited, Waltham Cross, Hatfordshire, England
Filed July 18, 1972, Ser. No. 272,816
Claims priority, application Great Britain, July 19, 1971, 33793/71
Int. Cl. B65d *83/14*
U.S. Cl. 222—402.13 **13 Claims**



A device for dispensing fluid from an aerosol container of the kind which meters discrete doses, operable to dispense the dose when suction is applied. The preferred form of the device has a recess to hold the aerosol with the outlet of the aerosol sealingly secured in a cavity, and a resilient element to seal the outlet from the cavity, which opens into an air duct. The resilient element is held against the cavity outlet by a spring-loaded pivoted arm, and a vane on the arm is located in the air duct, so that suction applied at the outlet of the duct will cause the vane to pivot the arm and release the element. In use, the aerosol is operated to meter a dose, which is held partly in the aerosol outlet and partly in the cavity until suction applied at the outlet of the duct causes the cavity to be opened and the dose dispensed into the duct.

3,826,414
HANDCUFF HOLSTER
Rudolph Valadez, 3313 Campbell Rd., #248 Houston, Tex. 77055
Filed June 21, 1973, Ser. No. 372,278
Int. Cl. F41b *13/04*
U.S. Cl. 224—2 F **5 Claims**



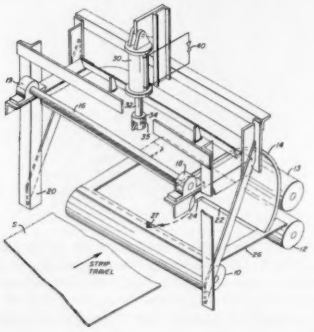
A handcuff holster comprising a pair of substantially circular spaced apart side members between which is circumferentially positioned a tapered end member. Each of the side members includes an outwardly extending annular groove which is located between a circumferential flange and an inner circular area. The annular grooves in cooperation with the inner area define an engaging pocket which conforms to the shape of conventional handcuffs. The end member is positioned between and to the circumferential flange and occupies

only a portion of the circumference about said side members to provide an opening into the engaging pocket. Means are also provided for securing the holster to a belt.

3,826,415
APPARATUS FOR PREVENTING STRIP ACCUMULATION

George S. Koss, Birmingham, and Jay R. Scott, Mountain Brook, both of Ala., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Sept. 13, 1972, Ser. No. 288,621
Int. Cl. B23d *17/06*
U.S. Cl. 225—94 **6 Claims**

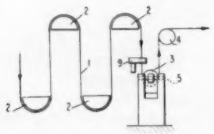


Apparatus for preventing accumulation of strip between stands of a multistand hot or cold reduction mill when a strip breaks includes a curved knife blade of greater width than the strip, means for maintaining the knife in a stand-by position above the path of the strip, and means for moving the knife into contact with the strip to cut and reverse the direction of travel of the strip. The method consists of detecting the strip break, actuating a cutting means, cutting the strip and reversing the direction of strip travel.

3,826,416
WEB EDGE POSITION CONTROLLING DEVICE

Akira Takagi, and Motoharu Kuroki, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation-in-part of Ser. No. 98,502, Dec. 16, 1970. This application Dec. 27, 1972, Ser. No. 318,978
Claims priority, application Japan, Dec. 17, 1969, 44-101443
Int. Cl. B65h *25/26*
U.S. Cl. 226—22 **3 Claims**

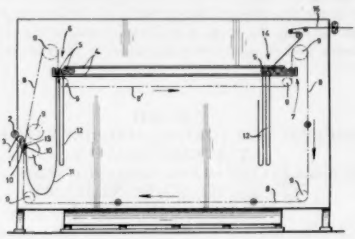


A device for controlling the position of the edge of a moving web in a web feeding apparatus in which a contact feeding station succeeds a noncontact feeding station. This device comprises a contact roller downstream of an air cushion web-feed station, said contact roller being pivoted about an axis not parallel to the surface of the outgoing web.

3,826,417
APPARATUS FOR FORMING AND MOVING VERTICAL LOOPS IN A STRIP OF MATERIAL

Wolfgang Koster, Bad Salzuflen-Schotner, and Harald Jentzsch, Brackwede-Quelle, both of Germany, assignors to Stork Amsterdam N.V., Amstelveen, Netherlands

Filed Mar. 8, 1972, Ser. No. 232,744
Int. Cl. B65h *17/06*
U.S. Cl. 226—107 **2 Claims**

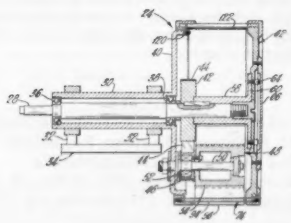


A festoon steamer comprising a set of supporting rods travelling through a closed circuit with a horizontal track in which the web is hanging down in loops from said rods, the loops being consecutively formed in a portion of the circuit ahead of said horizontal track and each loop being only picked up by a rod after its completion.

3,826,418
PULLING WHEEL CONSTRUCTION

Robert J. Gelin, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Apr. 20, 1973, Ser. No. 353,149
Int. Cl. B65h *17/20*
U.S. Cl. 226—190 **13 Claims**



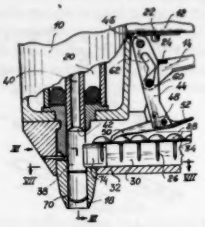
A pulling wheel construction is provided which includes separate peripheral elements for a spoke-type pulling wheel. The peripheral elements are held at one end by a rotatable circular member and at the opposite end by a ring member. The elements define a discontinuous, cylindrical surface for receiving a strand or the like and define slots therebetween to receive spokes of a spoke wheel within the pulling wheel. The spokes project beyond the peripheral elements to eject the strand from the periphery of the pulling wheel at a predetermined position thereon. The individual peripheral elements can be made of hard and long wearing material to increase the life of the pulling wheel, and they are also individually replaceable in the event of damage or failure. Further, only a few need be removed for access to the interior of the pulling wheel.

3,826,419

DEVICE FOR SEQUENTIALLY DRIVING LARGE HEADED GIMP NAILS

Giordano Bruno Maestri, 24, Via Vincenza, Milan, Italy

Filed Sept. 15, 1972, Ser. No. 289,237
Claims priority, application Italy, Sept. 21, 1971, 28872/71
Int. Cl. B25c *1/04*
U.S. Cl. 227—136 **5 Claims**



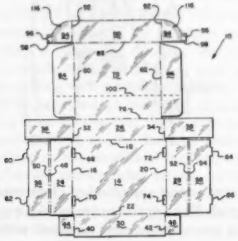
A device for sequentially driving nails, especially gimp nails connected in a row by a tape, into a workpiece, in which the nails are fed seriatim by a pawl adapted to engage behind the leading nail of the row into a cylindrical passage in which a driver rod is movable along an active stroke for driving the nail in the passage into a workpiece. Movement of the driver rod along its active stroke is actuated by a trigger lever mounted at one end for pivotal movement between a rest position and an actuating position. The trigger lever has at its other end a transverse pin engaging in a slot provided in a second lever pivotally mounted at one end and carrying on at the other end the aforementioned pawl. The slot has two slot portions including an angle with each other and arranged so that when the trigger lever moves from the rest towards the actuating position, the pin riding along one of the slot portions will cause the pawl to move the leading nail into the aforementioned passage, while during further movement of the pin through the other slot portion the pawl will be slightly retracted before the trigger lever reaches its actuating position.

3,826,420

SELF-LOCKING TAMPERPROOF CONTAINER

Robert A. Bamburg; Farris N. Duncan, both of West Monroe, and Roger M. Floyd, Monroe, all of La., assignors to Olinkraft, Inc., West Monroe, La.

Filed May 17, 1972, Ser. No. 253,998
Int. Cl. B65d *5/30, 45/00*
U.S. Cl. 229—45 **7 Claims**



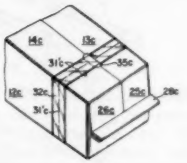
A container having unique tamperproof properties, in that, after the container is filled, the lid of the container may be permanently locked in place so that it may not be removed without destroying the integrity of the container. In order to remove the lid of the container, it must either be physically torn from the container or cut open along a cut scoreline provided in the lid for that purpose and for easy removal of the contents of the container. As a result, the contents may not be tampered with by someone not authorized access to the container without the container visibly showing that tampering has occurred. The permanent locking of the lid to the container is accomplished by at least one locking flap which engages locking means formed on one of the sides of the container.

3,826,421

SEVERABLE CARTON WITH STERILE EDGE

Hugh B. Morse, San Jose, and Thomas W. Foster, Palo Alto, both of Calif., assignors to Fibreboard Corporation, San Francisco, Calif.

Division of Ser. No. 833,008, June 13, 1969, Pat. No. 3,620,439. This application Jan. 20, 1971, Ser. No. 108,148
Int. Cl. B65d *5/54, 17/24*
U.S. Cl. 229—51 AS **6 Claims**



A carton comprises separable sections connected together at a continuous cut line, covered by a removable tape. Additional cut lines being formed on the carton adjacent to the cut line to provide a sterile edge around the carton upon removal of the tape and separation of the carton's sections.

ERRATUM

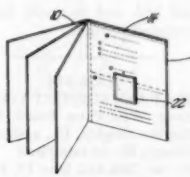
For Class 236—12 see:
Patent No. 3,827,016

3,826,422

PRINTED SHEET CONTAINING USER FOLDED ENVELOPE WITH COIN POCKET

Robert H. Dickinson, Birmingham, Mich., assignor to George F. Valassis & Company, Oak Park, Mich.

Filed Aug. 14, 1972, Ser. No. 280,616
Int. Cl. B65d *27/08*
U.S. Cl. 229—68 R **3 Claims**



A sheet adapted to be formed as a page of a brochure or as an insert in a magazine has imprinted thereon a form adapted to be filled in by a user and then folded along a printed line and formed into an envelope using a gummed line applied to the sheet during the printing process. A rectangular coin pocket is adhered to the sheet along three of its edges. The pocket straddles the fold line so that when the envelope is folded and sealed the opening in the coin pocket is closed off.

In an alternative embodiment the opening in the coin pocket is closed off by a gummed flap which may be adhered to the envelope.

3,826,423

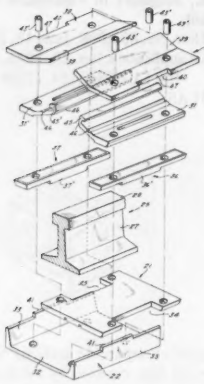
RAIL SEAT AND SUPPORT STRUCTURE

Robert A. McClung, 1401 Caribbean Rd., West Palm Beach, Fla. 33406

Continuation of Ser. No. 10,242, Feb. 10, 1970, abandoned. This application Dec. 15, 1971, Ser. No. 208,462

Int. Cl. E01b *9/02*

U.S. Cl. 238—264 **13 Claims**



A rail seat and support structure for mounting, cushioning, anchoring and insulating a rail. A flexible rail seat is provided with the rail seat being of resilient material and having surfaces assisting in forming a recess. The recess is open to the exterior of the rail seat on its upper surface and has an interior configuration corresponding to the base flange and the lower portion of the vertical portion of the rail so as to receive and engage those portions of the rail in insulating, cushioning and bearing relationship. The rail seat also has at least one interior chamber adjacent to each side of the rail and a bar in each of the chambers. A base plate having a horizontal portion and two spaced upright longitudinal side walls is present and the rail seat is positioned in the base between the side walls and is adapted to receive the rail in substantially parallel relationship with the side walls. A clamping plate is positioned on the upper surface of the rail seat on both sides of the rail and mounting means are present for fastening the assembled rail seat and support structure to a rail bed so as to maintain the rail seat and support structure in assembled arrangement, connected to the rail bed, and to retain the rail in mounted, cushioned and insulated position.

3,826,424

RAIL SEAT AND SUPPORT STRUCTURE

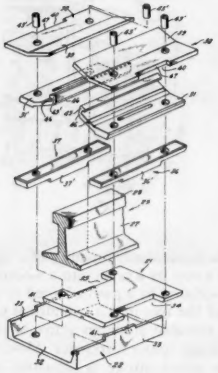
Robert A. McClung, West Palm Beach, Fla., and Frank V. Pliml, Jr., Arlington Heights, Ill., assignors to Illinois Tool Works Inc., Chicago, Ill., by said Pliml

Division of Ser. No. 208,462, Dec. 15, 1971, which is a continuation of Ser. No. 10,242, Feb. 10, 1970. This application June 20, 1972, Ser. No. 264,678

Int. Cl. E01b *9/02*

U.S. Cl. 238—264 **7 Claims**

A rail seat and support structure for mounting, cushioning, anchoring and insulating a rail. A flexible rail seat is provided with the rail seat being of resilient material and having surfaces assisting in forming a recess. The recess is open to the exterior of the rail seat on its upper surface and has an interior configuration corresponding to the base flange and the lower portion of the vertical portion of the rail so as to receive and engage those portions of the rail in insulating, cushioning and bearing relationship. The rail seat also has at least one interior chamber adjacent to each side of the rail and a bar in each of the chambers. A base plate having a horizontal portion and two spaced upright longitudinal side walls is present and the rail seat is positioned in the base between the side walls and is adapted to receive the rail



in substantially parallel relationship with the side walls. A clamping plate is positioned on the upper surface of the rail seat on both sides of the rail and mounting means are present for fastening the assembled rail seat and support structure to a rail bed so as to maintain the rail seat and support structure in assembled arrangement, connected to the rail bed, and to retain the rail in mounted, cushioned and insulated position.

3,826,425

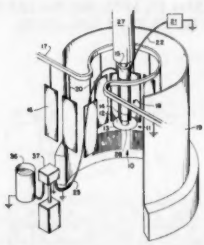
ELECTROSTATIC APPARATUS

James A. Scharfenberger, and Edward W. Drum, both of Indianapolis, Ind., assignors to Ransburg Corporation, Indianapolis, Ind.

Filed June 21, 1972, Ser. No. 264,967

Int. Cl. B05b *5/00*; **F23d** *11/28*

U.S. Cl. 239—15 **4 Claims**



An apparatus for and a method of electrostatically charging coating material. The apparatus includes a composite member terminating in an extended edge adjacent with coating material is formed into a charged spray. The composite member is constructed of an electrically non-conducting binder material such as a polymeric material, for example, phenolic resin and includes in the binder material an electrically conducting material such as graphite or copper, and reinforcing material such as glass fibers or woven hemp or flax (canvas). The composite member has desirable properties such as low effective

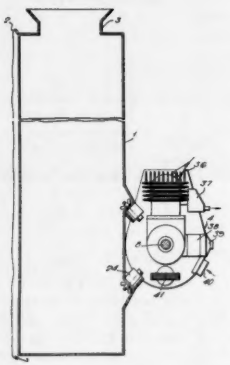
electrical capacitance despite a necessary large physical size, good impact and tensile strength, and good chemical and mechanical resistance to the action of the ingredients of the coating material. The composite member is adapted to be connected to a high voltage source such as a direct current voltage source capable of supplying up to 100,000 volts or more to the composite member. Means such as a coating material feed tube and nozzle supplies to the composite member a suitable liquid such as paint, or dry coating material such as powder. A suitable means is used to move the coating material across the composite member to the extended edge in the vicinity of which the coating material is formed into a charged spray. The last named means may include an inner hub and an outer hub for cooperatively retaining the composite member.

3,826,426

MOTOR-DRIVEN SPRAYING MACHINE TO BE CARRIED ON THE WORKER'S BACK

Giacomo Bonvicini, Via Romana, 17, Poviglio, Italy (42028)

Filed May 30, 1973, Ser. No. 365,226
Int. Cl. B05b 9/08
U.S. Cl. 239—127 **6 Claims**



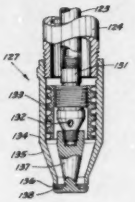
A knapsack motor-driven spraying machine for spraying liquids for agricultural purposes, for disinfestations of other treatments comprising a container for the liquid to be sprayed, provided with means for hanging the machine on the worker's back and including a pump for delivery the liquid under a predetermined pressure by means of an at least partially flexible delivery pipe ending with a handle including a nozzle controlled by a valve, provided to stop or reducing the liquid delivery, characterized by the fact that the pump is actuated by an internal combustion engine forming with said pump a compact unit carried on the outside of the rear wall of the container and each having self-carrying casing, on the side of the motor the motor pump unit being supported by fastening means including packing means and dampers to absorb the vibrations, while at the side where the pump is arranged its self-carrying casing is connected and supported by the container by two hollow connection members, one of which constitutes a portion of the suction pipe of the pump and the other is a portion of a recirculation pipe of the liquid, said two hollow connection members projecting into the inside of the container, where they are connected with pipes mounted into the container and which open near its bottom.

3,826,427

360° SPRAY APPARATUS WITH MEANS FOR CHANGING SPRAY PATTERN

Harry Wayne Rutherford, 1661 Molina Ln., Gardena, Calif. 90248

Filed Apr. 17, 1972, Ser. No. 244,372
Int. Cl. B05b 7/04
U.S. Cl. 239—186 **4 Claims**



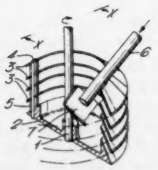
A spray apparatus with a 360° spray pattern is disclosed with means to allow one to change the pattern between a plane and a cone. The apparatus has a pair of coaxial tubes and the means includes a cylindrical body and a plug with a disk mounted on the end, and a post which plug is adjacent the end of the body. The body is slidably mounted on the outer tube and the plug is fixedly mounted onto the inner tube so that the axial length of a circumferential spacing between the disk and body is adjustable. A concave half-torus surface is formed internal on the disk and disposed around the post so that when the axial circumferential spacing is relatively close, a planar 360° spray pattern is formed and when the annular spacing is relatively wide, a conical 360° spray pattern is formed.

3,826,428

SPRAYING APPARATUS

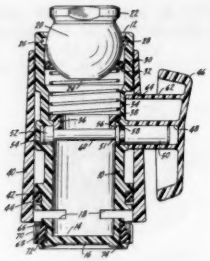
Ian Douglas Fergusson, Godstone, England, assignor to BP Chemicals International Limited, London, England

Filed Mar. 29, 1973, Ser. No. 346,016
Int. Cl. B05b 3/08
U.S. Cl. 239—222.11 **4 Claims**



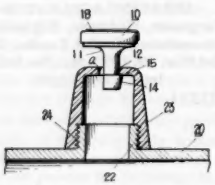
An apparatus for producing a very fine spray or mist of liquid of droplet size between 25 and 250 microns, comprises a plurality of annular strips coaxially mounted with and radially supported by a rotateable shaft. A supply pipe which terminates within the space enclosed by the strips is capable of producing a fan jet of liquid, the longitudinal axis of symmetry of the jet being inclined to the longitudinal axis of the rotateable shaft. The optimum distribution of liquid on the annular strips is achieved by using a fan jet of the curled-plate type.

3,826,429
ADJUSTABLE SHOWER HEAD
Alfred M. Moen, 25 Lakeview Dr., Grafton, Ohio 44044
Filed Apr. 23, 1973, Ser. No. 353,734
Int. Cl. B05b *1/32*
U.S. Cl. 239—460 10 Claims



An adjustable shower head in which a spray forming member having sealing properties is recessed into a groove in the body member of the shower head.

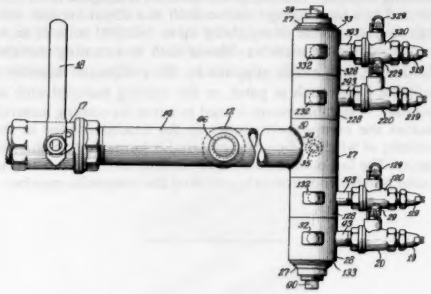
3,826,430
SPRAYER FOR SPRAYING A GREAT VOLUME OF LIQUID THROUGH A WIDE ANGLE WITH A LOW PRESSURE
Katsumi Akabane, and Shogo Otsuka, both of Kyoto, Japan, assignors to Kabushiki Kaisha Saneh, Kyoto, Japan
Filed June 11, 1973, Ser. No. 368,590
Int. Cl. B05b *1/26*
U.S. Cl. 239—523 4 Claims



This invention provides a sprayer featured by a specific arrangement of a nozzle assembly having a diffusing face which is divergent and curved from the proximal end toward the upper inside portion, whereby the liquid supplied into said nozzle is spread out in the form of a film along said diffusing face and dispersed out in atomized form from the widened edge of the nozzle. Thus, according to the sprayer of the present invention, a great volume of liquid can be sprayed through a wide angle with a low pressure.

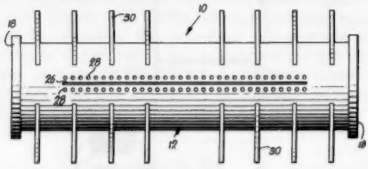
3,826,431
MULTIPLE SPRAY HEAD
Donald E. Telge, Kansas City, Mo., assignor to Velsicol Chemical Corporation, Chicago, Ill.
Filed Apr. 16, 1973, Ser. No. 351,405
Int. Cl. B05b *1/20*
U.S. Cl. 239—551 1 Claim

Disclosed is a liquid spray head having multiple nozzles which can be rotated into any desired position and through which the flow of liquid can be independently controlled to



adjust both the quantity and the distance to which the liquid is sprayed.

3,826,432
BURNER FOR ATOMIC ABSORPTION SPECTROSCOPY
Maw Shiu Wang, 1573 Ross, St. St. Louis, Mo.
Filed June 12, 1972, Ser. No. 262,154
Int. Cl. B05b *1/14*
U.S. Cl. 239—556 10 Claims

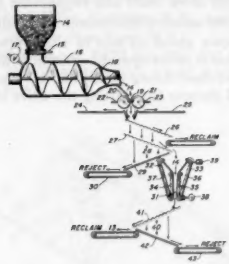


A scientific burner for use in atomic absorption spectroscopy has a hollow, cylindrical body provided with two laterally spaced, longitudinally extending rows of outlet holes and a single, longitudinally extending outlet slit disposed centrally between the two rows of holes. The size of the holes and the size of the slit as well as the relative spacing therebetween permits the burner to supply individual, low intensity reducing flames in addition to a single, high intensity oxidizing flame, and freedom from internal plates and like structure within the chamber of the burner eliminates the possibility of preignition or flashback. Removable plugs at opposite ends of the chamber provide access to the latter for thorough cleaning, and the smooth, arcuate configuration of the chamber wall facilitates complete removal of all contaminants therefrom after each analysis.

3,826,433
PROCESS FOR REMOVING BARK FROM WOOD CHIPS
John R. Erickson, Houghton, and William A. Hillstrom, Laurium, both of Mich., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.
Filed June 1, 1973, Ser. No. 366,187
Int. Cl. B02c *21/00*
U.S. Cl. 241—14 10 Claims

A process to remove the bark from wood chips by breaking the bond between the bark and wood fractions followed by segregation of the bark particles from the clean wood chips. The process includes the steps of: steaming the wood chip mass to weaken the bark-wood bond and render the bark

tacky; mechanically compressing the chips to partially break the bond between the bark and wood and to break a portion of the bark fraction into smaller particles; removing these particles, some of which adhere to the compressing medium, from further processing; subjecting the partially beneficiated chips



to unique abrasion or milling processes to fragmentize the remaining bark; and segregating the resulting clean wood chips from the fragmented bark. The sequence of steps may be varied and the bark is removed from processing at different stages.

3,826,434

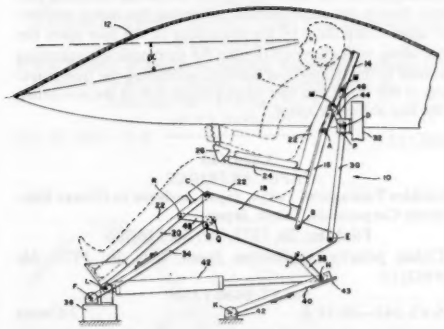
PELVIS AND LEGS ELEVATING G-PROTECTIVE SEAT

Harald J. Von Beckh, P.O. Box 1220, Hatboro, Pa. 18974

Filed May 18, 1973, Ser. No. 361,730

Int. Cl. B64d *25/02*

U.S. Cl. 244—122 R **13 Claims**



A pelvis and legs elevating (PALE) acceleration-protective seat for positioning an occupant within a vehicle in either a sitting position or a supine position while maintaining unobstructed forward vision out of the vehicle. At a preselected acceleration level substantially along the spinal axis of the occupant in the sitting position, the seat elevates the pelvis and legs while the head remains stationary relative to the vehicle.

3,826,435

APPARATUS FOR DISPERSING PIGMENTS IN A LIQUID PHASE

Carlos Oliver Pujol, Badalona, Spain, assignor to Oliver and Batlle, S.A., Badalona, Spain

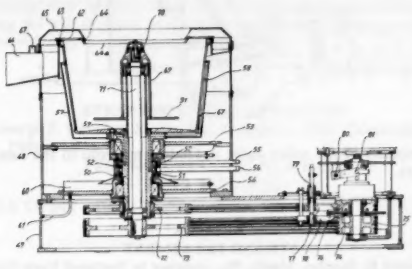
Filed Sept. 22, 1972, Ser. No. 291,395

Claims priority, application Spain, Feb. 12, 1972, 339720; Sept. 4, 1972, 406388

Int. Cl. B02c *17/16, 17/24;* **B01f** *15/02*

U.S. Cl. 241—171 **9 Claims**

A ball mill for dispersing a pigment in a liquid carrier, which ball mill includes an upwardly opening cup-shaped tub mounted for rotation about a substantially vertical axis. A hollow exterior drive shaft is fixed to the bottom wall of the tub and projects upwardly and downwardly therefrom, and rotatably supports in the interior thereof a drive shaft which has the upper end thereof fixed to a downwardly projecting skirt having a stirring disk secured to the lower edge thereof.



A single drive motor is provided for rotating the interior and exterior shaft. A first transmission means drivingly connects the drive motor to the interior shaft, and a second transmission means drivingly connects the drive motor to the lower portion of the exterior shaft, said second transmission means including a disengageable clutch device.

3,826,436

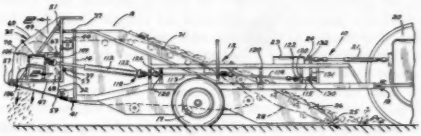
VINE REDUCING APPARATUS FOR COMBINE

Frank A. Cetrulo, Fort Thomas, Ky., assignor to National Factors, Inc., Cincinnati, Ohio

Filed Nov. 10, 1972, Ser. No. 305,448

Int. Cl. B02c *13/02*

U.S. Cl. 241—186 R **3 Claims**



A potato vine reducing apparatus for a potato combine consisting of a housing supported on said combine and including a plurality of swinging flails carried by a rotating member, said flails receiving said vines from a conveyor of said combine, a plurality of stationary knives in said housing operatively associated with said flails and means carried by said rotating member to eliminate variations in the speed of rotation of said member which would otherwise result from unusually heavy loads of vines received thereby.

3,826,437

DEMOLITION MILL

Fred E. Warren, Jr., Tigard; Kenneth F. Fling, Sherwood, and Gary R. Moore, Hillsboro, all of Oreg., assignors to Ecolo-Tech, Inc., Sherwood, Oreg.

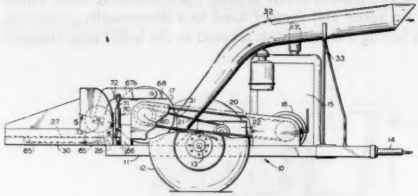
Filed Feb. 16, 1973, Ser. No. 333,401

Int. Cl. B02c *13/04*

U.S. Cl. 241—186 R **5 Claims**

A demolition mill for solid debris utilizes free swinging demolition hammers rotatably mounted on shafts interconnecting solid metal wheels journaled in a housing. The hammers extend radially of the wheels under the action of centrifugal force to break, shatter or pulverize all kinds of solid debris. A hydraulic feed rotor is journalled adjacent the housing inlet and includes a cylindrical feed roller driven by a

hydraulic motor mounted in a tube positioned within the roller. Lengths of chain or serrated bars welded to the

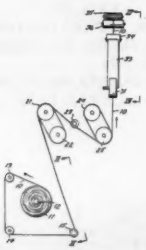


periphery of the roller assist in feeding material to the hammers.

3,826,438
STRAND TREATMENT

Robert K. Stanley, Media, Pa., assignor to Textured Yarn Co., Inc., North Kennett Square, Pa.

Division of Ser. No. 386,489, July 31, 1964, Pat. No. 3,317,977. This application Dec. 30, 1966, Ser. No. 606,420The portion of the term of this patent subsequent to Aug. 25, 1981, has been disclaimed.
Int. Cl. B65h *59/02, 59/38*
U.S. Cl. 242—45 **2 Claims**



Tension in a textile strand being unwound from a traverse-wound package is equalized by passing the strand sequentially about portions of a plurality of rolls near the package, a friction-free guide, and a pair of variably spaced rolls whose spacing controls braking of the package.

3,826,439
GOLF BALL RETRIEVER

Paul G. Moon, 9614 Dona Ct., Crown Point, Ind. 46307

Filed May 25, 1973, Ser. No. 363,999
Int. Cl. A63b *69/36;* **B65h** *75/00*
U.S. Cl. 242—54 R **6 Claims**

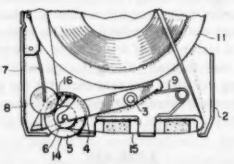
A compact golf ball retriever including a housing having a golf ball disposed on the outside thereof with a retrieving line wound upon a winding and storage spool located in the housing with one end of the line attached to the spool and the opposite end of the line extending through an opening in the housing and attached to the golf ball, a windup rotor operatively associated with the spool and adapted for movement between an inoperative position freeing and spool for substantially drag free unwinding of the line therefrom and on operative position engaging the reel for winding the line thereupon, a drive shaft extending longitudinally through the central axis of the spool and rotor adapted for driving operation of the rotor as well as selectively shifting the rotor between the operative and inoperative positions, a ball receiving member generally aligned with the housing opening and axially moveable relative thereto in directions towards and away therefrom with the retrieving line passing through anxial aperture in the ball receiving member, the top end of the drive shaft being adapted to engage and move the ball receiving member in a direction outwardly of the housing upon outwardly directed axial movement of the drive shaft so as to urge the golf ball outwardly therefrom, a drive gear connected to the bottom end portion of the drive shaft and engageable by an electric motor to effect the rotative movement of the drive shaft and the connected rotor about its axis to effect rewinding of the line when the rotor is in the operative position, the axial movement of the drive shaft being controlled by a solenoid opeatively connected thereto for shifting the drive shaft and con-

nected rotor between the operative and inoperative positions while also effecting the contact of the top end of the drive shaft with the ball retrieving member to propell the golf ball outwardly therefrom, and electrical circuit means for electrically connecting the motor to a suitable power source to effect rewinding of the line upon the spool, the circuit including elements therein for automatically rendering the motor ineffective upon completion of the rewinding of the line upon the spool along with elements therein for automatically returning the rotor to the inoperative position permitting the free movement of the spool and line upon completion of the rewinding of the line about the spool.

3,826,440
TAPE CARTRIDGE

Tsunehiro Tsukagoshi, Tokyo, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Dec. 20, 1972, Ser. No. 316,786
Claims priority, application Japan, Dec. 20, 1971, 46-119452[U]
Int. Cl. B65h *17/48*
U.S. Cl. 242—55.19 A **3 Claims**



In an endless tape cartridge in which a pinch roller having a larger diameter portion and a smaller diameter portion is pivotably supported such that, when the cartridge is in use, the larger diameter portion abuts under pressure against the tape recorder capstan and the smaller diameter portion abuts under pressure against a pivotably supported press roller which cooperates with the smaller diameter portion to drive the tape and, when the cartridge is not in use, the pinch roller is pivoted away from the press roller, a projection is provided

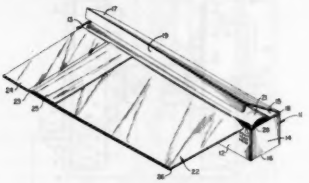
which cooperates with the press roller to grasp the tape firmly when the cartridge is not in use, thereby preventing the tape from getting damaged.

3,826,441

LAMINATED WEB PACKAGE

Gilbert De Wayne Miles, Ossining, N.Y., assignor to Colgate-Palmolive Company, New York, N.Y.

Filed Mar. 2, 1972, Ser. No. 231,109
Int. Cl. B65d *65/02, 85/67, 85/72*
U.S. Cl. 242—55.53 **4 Claims**



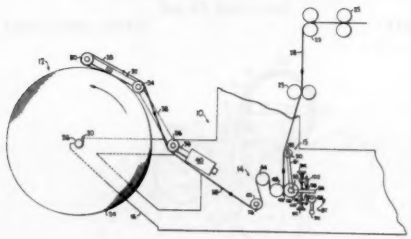
A web of wrapping material in the form of a constant width sheet of synthetic plastic film having parallel bands of metal foil secured along opposite side edges is longitudinally folded, prior to winding into a supply roll, about an offcenter fold region in the film so that the fold region is at one end of the roll and the foil bands lie in laterally spaced non-overlapping relation at the other end of the roll, thus providing a short roll requiring a shorter container and facilitating clean severance of a leading end length wound off the roll.

3,826,442

APPARATUS FOR CONTROLLING THE TENSION ON WEB MATERIAL

Erwin Bethke, Erkelenz-Keyenberg, Germany, assignor to F. L. Smithe Machine Company, Inc., Duncansville, Pa.

Filed Jan. 30, 1973, Ser. No. 328,134
Int. Cl. B65h *25/04*
U.S. Cl. 242—75.5 **11 Claims**



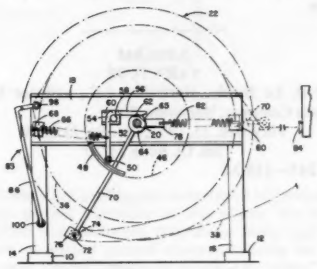
Web material is unwound from a roll and supplied to a web unwind unit having a tension sensing mechanism mechanically connected thereto. The web material having a desired tension is drawn by an envelope machine drive at a first preselected linear speed through the web unwind unit into abutting contact with the tension sensing mechanism. The tension sensing mechanism includes a tension sensing roll arranged for rotation with an eccentrically supported shaft by a pair of tension arms. The tension sensing roll is arranged to apply a preselected pressure upon the web material so that the tension sensing roll responds to an increase in web tension by rotating with the tension arms in clockwise direction about the eccentrically supported shaft. The eccentrically supported shaft revolves in clockwise direction to move a pressure roll rotatably supported thereon toward a feed roll urging the web material into frictional engagement therebetween. The web material is fed by the pressure roll and the feed roll at an increased preselected linear speed to decrease the web tension. The tension sensing roll responds to a decrease in tension by rotating in counterclockwise direction with the tension arms. The eccentrically supported shaft also revolves in counterclockwise direction to release the web material from frictional engagement between the feed roll and the pressure roll restoring the web material to the slower preselected linear speed as provided by the envelope machine drive.

3,826,443

STRAP DISPENSING APPARATUS

George F. Goodley, Media, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed Nov. 9, 1972, Ser. No. 305,120
Int. Cl. B65h *17/52*
U.S. Cl. 242—105 **7 Claims**



Apparatus for dispensing package strapping from a mill wound coil includes a reel for rotatably supporting the coil and a guide or aligner for directing the traversed windings of the coil toward the center line of the reel at a point well in advance of the point where the strapping actually leaves the reel. This prevents a sharp pull on the strapping from causing a winding at the edge of the coil to slip from the edge and possibly jam between the coil and a flange of the reel. The disclosed arrangement also enables the use of a simple guide for controlling rather precisely the path of the strapping as it leaves the apparatus even though on the coil the strapping windings may be traversed over a distance of several inches.

3,826,444

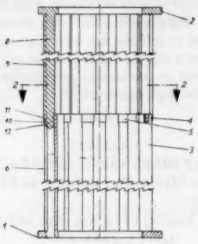
AXIALLY TELESCOPING PACKAGE CARRIER FOR THE TREATMENT OF THREAD AND YARN

Gerhard Herbert Hahm, 8, Carla-Seidlung, Aachen, Germany

Filed May 5, 1972, Ser. No. 250,776
Claims priority, application Germany, May 10, 1971, 2122965
Int. Cl. B65h *75/24, 75/14*
U.S. Cl. 242—118.11 **37 Claims**

A telescopic package carrier for treatment of thread and yarn, the carrier comprising two axially spaced rings and two sets of axially extending, peripherally spaced carrier members collectively constituting a uniform yarn-supporting cylindrical periphery. Each carrier member of a given set has guide portions for positively guiding a corresponding carrier member of the other set. The carrier members of the first set engage with their free ends in a positive complementally engaging interlocking manner with the free ends of the carrier members of the other or second set. Corresponding members have their free ends positively engaged over their entire overlap length at any given time. Each carrier member, at its point of connection with the respective ring, may be constructed to have a lower resistance to bending, or a greater degree of resiliency

thereat, thereby being adaptable to be subjected to any compressive forces applying a radially inwardly directed force

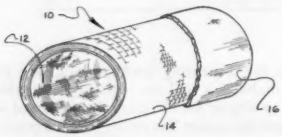


either directly or indirectly to the peripherally spaced carrier members.

3,826,445
YARN TUBE

Clement D. Le Hardy, Hartsville, S.C., assignor to Sonoco Products Company, Hartsville, S.C.

Filed Dec. 23, 1971, Ser. No. 211,229
Int. Cl. B65h *75/10*
U.S. Cl. 242—118.32 **6 Claims**



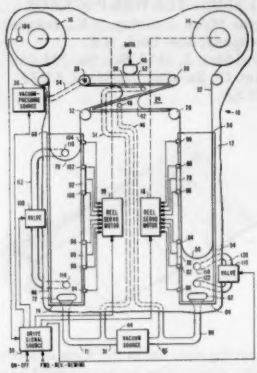
A yarn carrier having a penultimate ply of embossed paper upon which a smooth, soft ply of material such as parchment, or film is applied to form a resilient slip resistant surface for textile yarns.

3,826,446
PNEUMATIC TAPE REWIND SYSTEM

Hale M. Jones, Playa del Rey, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Feb. 14, 1972, Ser. No. 225,866
Int. Cl. G11b *15/58*
U.S. Cl. 242—185 **7 Claims**

A magnetic tape transport system is provided in which a capstan used to drive the tape bidirectionally and intermittently during normal operation is coupled to a pressure source so as to disengage from and act as an air bearing with respect to the tape during rewind, permitting the tape to be driven by differences in tension on loops of the tape within a pair of vacuum chambers. The tension differential is produced by an arrangement of valves and conduits which partially vent the interior of the upstream vacuum chamber to atmosphere to maintain the tape loop therein at a nominal short loop position and which vent the interior of the downstream vacuum chamber to atmosphere only when the loop therein becomes too long so as to maintain the loop at an optimum long loop position. Thus capstan drive is eliminated during rewind with system performance being slaved to the performance of the reel motor-servo combinations which function to maintain the tape loops at the nominal positions within the vacuum chambers. During normal operation the venting conduits within the vacuum chambers are blocked by valves to restore normal

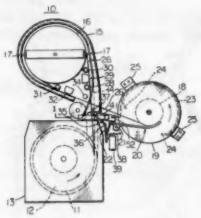


vacuum tension within the chambers compatible with capstan drive.

3,826,447
AUTOMATIC TAPE THREADING MECHANISM

Toshiomi Yabu; Hideki Sakumoto, and Yoshiteru Namoto, all of Osaka, Japan, assignors to Matsushita Electric Industrial Company, Limited, Kadoma City, Osaka, Japan

Filed Dec. 1, 1972, Ser. No. 311,377
Claims priority, application Japan, Dec. 1, 1971, 46-97361; Dec. 1, 1971, 46-97363; Dec. 1, 1971, 46-97379; Dec. 1, 1971, 46-97380; Dec. 27, 1971, 47-595; Dec. 27, 1971, 47-596
Int. Cl. B65h *59/38;* **G03b** *1/04;* **G11b** *1/52*
U.S. Cl. 242—188 **4 Claims**



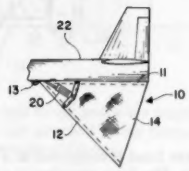
Means for detecting an accidental stoppage of a lead tape attached to one end of a reel of recording tape while the lead tape is advanced from the supply reel, through a circular arc shaped guide member, to the take-up reel. The detecting means comprises a first circuit for detecting the movement and stoppage of the lead tape, a second circuit for detecting the feed of the lead tape drawn from the supply reel, and switching means selectively operated in a predetermined sequence in response to the first and second circuits for de-energizing the tape drive when a stoppage of the lead tape is detected.

3,826,448

DEPLOYABLE FLEXIBLE VENTRAL FINS FOR USE AS AN EMERGENCY SPIN-RECOVERY DEVICE IN AIRCRAFT

Sanger M. Burk, Jr., Newport News, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sept. 14, 1972, Ser. No. 289,018
Int. Cl. B64c 5/12
U.S. Cl. 244—91 5 Claims



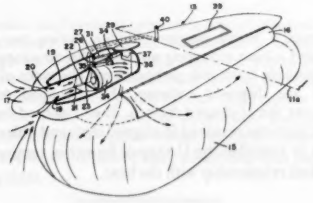
A flexible fin device for mounting on an aircraft to effect spin recovery. The device may be selectively deployed to provide a triangular planform of flexible material to provide spin recovery, and retracted for compact storage during non-use. A single flexible fin may be deflected in a specific direction depending on direction of spin rotation, or two flexible fins forming an inverted "V" configuration may be used according to the invention. The device may be mounted on the underbody of the aircraft.

3,826,449

INFLATION AND EVACUATION SYSTEM FOR AN AIR CUSHION LANDING SYSTEM

Bud D. Nelson, Kent, and William M. Brennan, Edmonds, both of Wash., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 21, 1973, Ser. No. 400,769
Int. Cl. B60v 3/08
U.S. Cl. 244—100 R 7 Claims



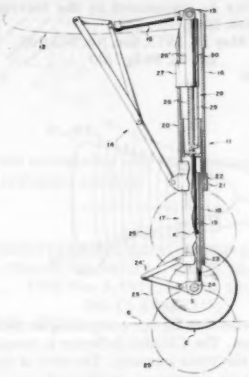
An air cushion landing system (ACLS) for an aircraft including a pair of wing pod-mounted inflatable trunks, and an air supply and exhaust system for inflating and deflating the air cushion trunks. For inflating, a swiveled fan driven from a high pressure turbine engine compressor bleed source directs incoming air from a sealable intake port to the respective trunk. For deflating, an actuator connected to a linkage network swivels the fan, plugs the intake port and opens an exhaust door positively drawing air out of the trunk and exhausting it to the atmosphere.

3,826,450

LANDING GEAR FOR STOL AIRPLANES

Norman S. Currey, Atlanta, and John H. Renshaw, Marietta, both of Ga., assignors to Lockheed Aircraft Corporation, Burbank, Calif.

Filed June 4, 1973, Ser. No. 366,793
Int. Cl. B64c 25/58
U.S. Cl. 244—103 R 6 Claims



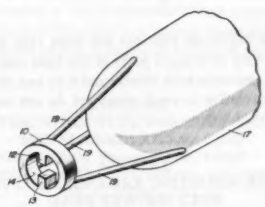
An airplane main landing gear is designed to provide abnormally high ground clearance at touchdown, for minimum ground effect and maximum nose-down angle, and then to slowly sink to normal ground clearance during the landing roll. This gear may be contracted to lower or "kneel" the airplane. In addition, differential lengthening of left and right gears is provided to permit the airplane to land in a banked attitude for crosswind landings, thereby obviating the necessity to fully straighten-out the airplane before touchdown during such operations. The latter feature also provides a crosswind gear which is operationally less complicated than conventional crosswind gears which necessitate turning/steering all gears or wheels.

3,826,451

MANGETOHYDRODYNAMIC GENERATOR FOR BALLISTIC MISSILES

Rodney E. Grantham, Bethesda, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 30, 1963, Ser. No. 320,225
Int. Cl. B64g 1/00
U.S. Cl. 244—1 SS 10 Claims



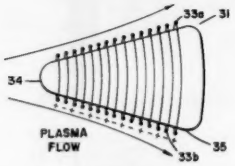
1. A power supply for re-entry vehicles, comprising:
a magnetohydrodynamic generator having a magnet, electrodes positioned in the field thereof, and conductors extending from said electrodes to equipment in said vehicle, and

means for supporting said generator on said vehicle in position to have atmospheric air pass through the field of said magnet as the vehicle passes through the atmosphere.

3,826,452
ELECTRICAL CONTROL DEVICE FOR A RE-ENTRY VEHICLE

William A. Little, Palo Alto, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 25, 1973, Ser. No. 363,905
Int. Cl. B64g 1/00
U.S. Cl. 244—1 SS **4 Claims**

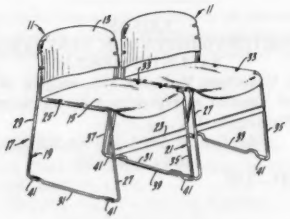


An Electron-Deflection Device comprising an electron gun, a Chladni deflector. The Chladni deflector is comprised of a double helix ring electrode assembly. The nose of the re-entry body is encircled by a series or plurality of ring electrodes which are alternately positively and negatively charged. Upon re-entry the plasma generated by the leading edge of the nose would be deflected away from the skin of the re-entry body. This concept would allow communication with the vehicle by external RF signals.

3,826,453
GANGING CHAIRS

Arleigh C. Hitchcock, Grand Rapids, Mich., assignor to The Shaw-Walker Company, Muskegon, Mich.

Filed Feb. 21, 1973, Ser. No. 334,457
Int. Cl. A47c 15/00
U.S. Cl. 297—248 **11 Claims**



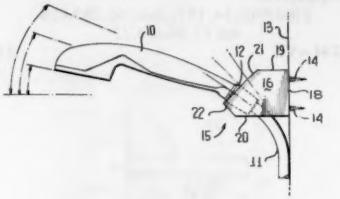
A chair having metal rod legs and base rails with ganging members formed as integral parts of the base rails. The ganging members prevents both lateral and fore and aft movement of the chairs relative to each other yet do not interfere with stacking of the chairs.

3,826,454
ADJUSTABLE MOUNTING ARRANGEMENT FOR HAND-HELD SHOWER HEAD

Claus D. Zieger, Covina, Calif., assignor to Interbath, Inc., Covina, Calif.

Filed July 24, 1972, Ser. No. 274,511
Int. Cl. B05b 15/08
U.S. Cl. 248—75 **6 Claims**

An adjustable mounting arrangement for hand-held shower heads includes a frusto-conical hose coupling, secured to the shower head, and a wall-mounted bracket in which the coupling is supported. The bracket includes opposed sidewalls containing a plurality of opposed pairs of channels of tapered arcuate cross-section such that each channel pair is capable of supporting the frusto-conical hose coupling. Each channel pair is oriented at a different angle relative to the vertical

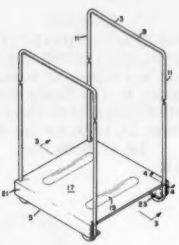


whereby the shower head is supported at a different angle by each channel pair. The hose coupling is rotatable, about its own longitudinal axis, within each support channel pair to provide additional positioned adjustment of the shower head. The front end of the bracket is opened to permit the hose to fit therethrough when the shower head is being placed in or removed from the bracket.

3,826,455
BREAD WRAPPER HOLDER

William J. O'Donnell, 18 Scotch Pine Dr., Voorheesville, N.Y. 12186

Filed Apr. 9, 1973, Ser. No. 349,307
Int. Cl. B65b 67/12
U.S. Cl. 248—97 **5 Claims**



Discloses a bread wrapper holder having two U-shaped frames and a base mounting an empty bread wrapper for use as a disposable trash and garbage bag. The sides of the bread wrapper are disposed between the U-shaped frames and cuffed over the U-shaped frames. The U-shaped frames have terminal portions received in aligned slots and holes formed in the base to assemble the U-shaped frames in removable, positive-locked relationship with the base.

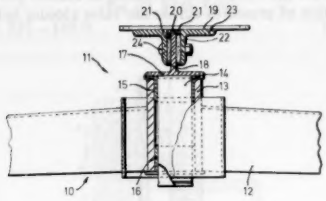
3,826,456
ROCKING CHAIRS

Arthur Tranter, West Hagley, and John Dillwyn Olson, Wightwick, both of England, assignors to Vono Limited, Tipton, England

Continuation-in-part of Ser. No. 93,122, Nov. 27, 1970, abandoned. This application Feb. 13, 1973, Ser. No. 332,175
Int. Cl. A47c 3/18
U.S. Cl. 248—375 **5 Claims**

A mount for tiltably mounting the seat of a chair on a base, and a chair including such a mount, the mount comprising a plurality of pads of resilient material such as rubber trapped between an upright centre plate and a pair of angle brackets

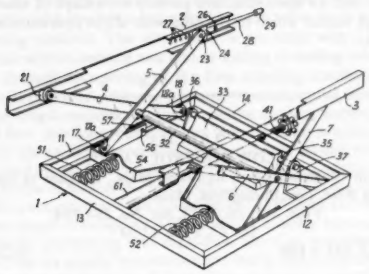
arranged with their upright webs parallel to the centre plate. The centre plate is attached to the base whilst the angle brackets are attached to the seat via a support plate or plates supported by, but not attached to the centre plate to take the major part of the weight of the seat.



3,826,457
SUSPENSION DEVICE FOR A VEHICLE SEAT

Jacques-Albert Huot de Longchamp, Paris, France, assignor to Sable Freres International

Filed June 21, 1973, Ser. No. 371,965
Claims priority, application France, Nov. 28, 1972, 72.42200
Int. Cl. A47c 3/22; B60n 1/06
U.S. Cl. 248—399 **4 Claims**



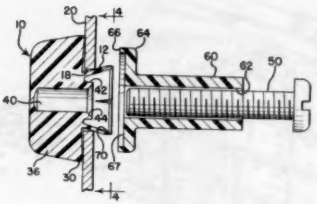
Two parallel and vertical pairs of levers of identical length are each coupled in articulated relation at an intermediate point and pivotally mounted at the upper ends in two parallel upper guides and at the lower ends in two parallel horizontal guides which support the complete suspension system. A shaft is mounted between the points of articulation and rotatably applied by elastic means against a cam having a concave cylindrical surface which is positionally adjustable with respect to the lower guides.

3,826,458
PLASTIC FASTENER

Julian Vernon Fisher, Carpentersville, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.

Filed Feb. 20, 1973, Ser. No. 333,574
Int. Cl. A47g 29/02
U.S. Cl. 248—239 **16 Claims**

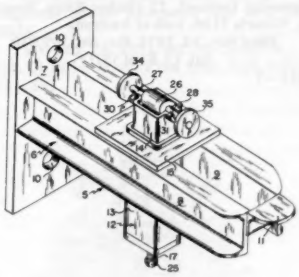
A one piece plastic fastener for application to one side of a panel having a generally square aperture and adapted to cooperate with secondary means located on the opposite side of the panel. The fastener has a tapered thin-wall cup-shaped head for engaging said opposite side of the panel adjacent the edges of the aperture when the fastener is telescoped and then rotated in the aperture with angularly offset rigid means adjacent said head traversing the aperture after rotation of the fastener and cooperating with said aperture to prevent unintentional retrograde rotation.



3,826,459
ADJUSTABLE FORM SUPPORT BRACKET

Wayne E. Warren, 3801 41st St., Tampa, Fla. 33610

Filed May 3, 1972, Ser. No. 249,796
Int. Cl. E04g 1/56
U.S. Cl. 248—287 **1 Claim**



A bracket for supporting overhead framework comprises a pair of telescoping sleeves supported between two horizontal parallel beams extending from a plate attachable to a vertical building column. The sleeves are supported vertically between the beams by a flange extending about the top portion of a first sleeve and resting on the beams. The second sleeve is elevated and lowered relative to the first sleeve by a screw rotatable in the first sleeve and threaded in the second sleeve. The second sleeve has a roller journalled in the top end which is adapted to be engaged by a beam of a frame to be supported and permits the beam to roll across the top of the bracket for placement and removal of the framework from a construction site. Discs at the ends of the roller and having larger diameters than the roller provide guides to maintain the beam on the roller.

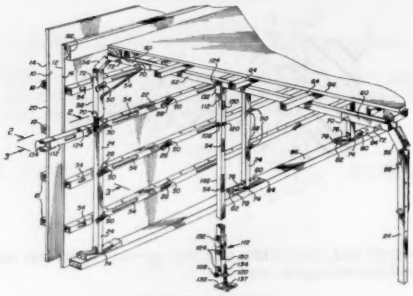
3,826,460
MONOLITHIC STRUCTURE FORMING MEANS WITH METAL TUBULAR BRACING

Jack Cast, 2920 W. Holly, Phoenix, Ariz. 85009

Filed Sept. 13, 1972, Ser. No. 288,568
Int. Cl. E04g 11/02
U.S. Cl. 249—27 **4 Claims**

A form means for casting monolithic concrete structures comprising a demountable hollow tubular metal frame structure adapted to support plywood panels such that the panels are reusable many times without damage; said metal frame structure including several channel shaped connector means serving as horizontal, vertical and diagonal connector means for the hollow tubular members of said frame structure; said

hollow tubular metal frame members also having slotted openings of varying length and spacing to receive tie rods at

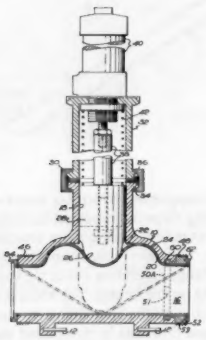


various modular spacing of the intersections of the vertical and horizontal frame members of the invention.

3,826,461
VALVES

Francis Summerfield, 9 Dunstan Dr., Adel, Leeds LS16 8EW, and Alexander Unthank, 22 Timber Ridge, Doncaster, Melbourne, Victoria 3108, both of Australia

Filed Nov. 24, 1972, Ser. No. 309,070
Int. Cl. F16l *55/14*
U.S. Cl. 251—7 **10 Claims**



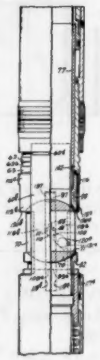
A pinch valve casing having two passages which in general define a T-shape, the casing being in two identical halves which are pivotally interconnected and can be opened for insertion or removal of a pinch tube. The casing preferably is provided at each end with a removable collar which forms its connection with the casing parts by the closing of the casing and can be removed by the opening of the casing.

3,826,462
LARGE BORE ROTARY SAFETY VALVES FOR WELLS

Frank H. Taylor, Carrollton, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Nov. 1, 1972, Ser. No. 302,661
Int. Cl. F16k *31/12*
U.S. Cl. 251—58 **11 Claims**

Rotary ball type safety valves for wells having a large bore therethrough for large flow capacity. Actuating means for the valves includes spring loading means disposed in a section of the valve spaced from the locking mechanism and adapted to permit the valves to be redressed without disturbing the spring assembly, which also permits higher strength springs to be used in the valves. Multiple springs or modular springs and multiple or modular fluid pressure actuating mechanisms are provided for the valves, and equalizing structures provide for equalization of pressures across the valve closure before the

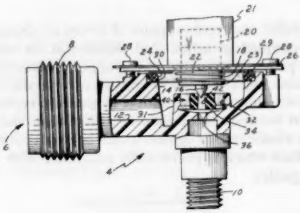


same is moved between open and closed positions. Stronger and more accurate actuating means structure for rotation of the rotary valve between open and closed positions is provided, and an open structure permits for escape of sand and foreign matter which might otherwise affect operation of the valves.

3,826,463
FLOW CONTROL VALVE

William W. Beauregard, Agawam, Mass., assignor to Springfield Wire, Inc., Springfield, Mass.

Filed Apr. 26, 1973, Ser. No. 354,754
Int. Cl. F16k *47/08*
U.S. Cl. 251—120 **5 Claims**



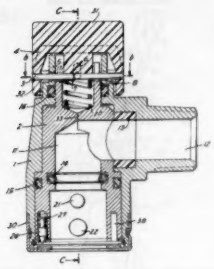
A flow control valve having a generally cylindrical, unitary resilient valve seat and flow control member having a toroidal lower, outer edge portion extending about the periphery thereof. The body of the valve has a conical valve surface such that the entire undersurface of said resilient control member, spans in spaced relation the entire conical surface when the control member is not flexed by fluid pressure. A recess is provided in the side wall of the valve body above the outer edge of the conical surfaces to receive the toroidal edge portion of the control member.

3,826,464

DISENGAGEABLE SAFETY COUPLING FOR CONDUITS

Hans Berghofer, Alte Landstrasse 274, 2 Hamburg 65, Germany

Filed Apr. 9, 1973, Ser. No. 348,784
Int. Cl. F16k 5/04
U.S. Cl. 251—149.9 10 Claims



A first coupling member has a first and a second port communicating with its interior, and a valve body is accommodated in the first coupling member and has a passage. The valve body is turnable relative to the first coupling member between a position permitting fluid flow between the ports, a position preventing fluid flow, and a coupling position. A second coupling member is insertable into and withdrawable from the passage of the valve body so as to be coupled and turnable with the latter but only when the valve body is in its coupling position. The valve body is provided with a collar coaxial with its turning axis and extending in sealing relationship through an opening of the first coupling member. This collar is provided with one or more circumferential first slots whose length corresponds to the angular distance between the fluid-flow blocking position and the coupling position and which has an axially recessed end portion. A second collar is provided on the first coupling member, surrounding the opening therein as well as the first collar, and having at the level of the first end portion a circumferentially extending second slot whose length corresponds to the angular distance between the fluid-flow permitting and fluid-flow blocking positions and which has an axially recessed second end portion extending to the level of the first slot. A control member is provided for effecting manual turning of the valve body between its positions. The control member is coaxial with the second collar and has at least one connecting member turnable with the control member and having portions extending into the slots. These portions are received in the first end portion when the valve member is located intermediate its fluid-flow permitting and fluid-flow blocking positions, and in the second end portion when the valve member is intermediate its fluid-flow blocking and coupling positions.

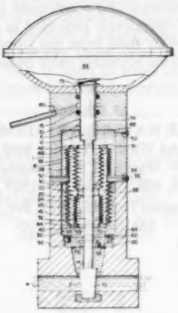
3,826,465

VALVE ASSEMBLY

Stanley James Whittaker; Cyril J. Astill, and Peter Janzen, all of Deep River, Ontario, Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Canada

Filed Nov. 24, 1972, Ser. No. 309,455
Int. Cl. F16k 31/365
U.S. Cl. 251—335 B 4 Claims

A valve assembly having an annular cavity around the valve stem in the casing, with two, coextensive pairs of bellows around the valve stem, each pair being arranged end-to-end and sealed to form a cavity between them. The inner pair of bellows is joined at their join to the valve stem, whilst the outer pair of bellows are joined to the casing. When the valve is opened to pass transport fluid, buffer fluids sealed between the bellows and in an outer portion of the annular cavity beyond the bellows are brought to the pressure of the transport fluid by flexing of the bellows. Thus should a bellows fail the transport fluid will only seep through that bellows into the buffer fluid.

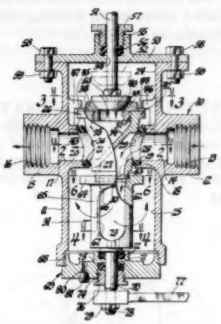


3,826,466

FLUID FLOW CONTROL VALVE

Paul J. Scaglione, 30180 Richmond Hill Dr., Farmington, Mich. 48024

Filed Aug. 24, 1972, Ser. No. 283,574
Int. Cl. B01d 35/02; F16k 5/02, 5/04, 5/06
U.S. Cl. 251—192 13 Claims



A fluid flow control valve having a valve body in which is formed a vertical elongated chamber. The valve body is provided with an inlet passage and an outlet passage, and with a stationary annular seal mounted around the inner end of each of said passages. A rotatable valve is operatively mounted between said annular seals. The rotatable valve is provided with means for releasably retaining the valve in a locked position when it is rotated to the closed position. The rotatable valve has a pair of chambers formed therein, with one of said chambers comprising an inlet chamber having an inlet port communicating with said inlet passage and a downwardly opening outlet port communicating with the lower end of said valve body chamber, and the other of said pair of chambers comprising an outlet chamber having an upwardly opening inlet port communicating with said valve body chamber and an outlet port communicating with said outlet passage, whereby fluid entering said inlet passage will pass through said rotatable valve inlet chamber and down into the lower end of said valve body chamber and thence upwardly around said rotatable valve and into said rotatable valve outlet chamber and into said outlet passage. The valve includes means

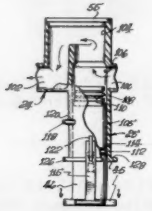
mounted in the lower end of the valve body chamber for rotating the rotatable valve between open and closed positions. The lower end of the elongated valve body chamber is adapted to function as a sediment and condensate collection chamber. A valve means is operatively mounted in the valve body for regulating the flow of fluid from the upper end of the valve body chamber into the rotatable valve outlet chamber.

3,826,467

EXTENDIBLE WATERING SYSTEM FOR FOWLS

Harold W. Hart, and Warren H. Hart, both of Glendale, Calif., assignors to H. W. Hart Mfg. Co., Glendale, Calif.

Division of Ser. No. 888,594, Dec. 29, 1969, Pat. No. 3,664,305.
This application Dec. 16, 1971, Ser. No. 208,750
Int. Cl. F16k *35/00*
U.S. Cl. 251—284 **5 Claims**



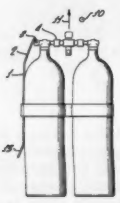
A pipeline comprises plastic pipe lengths interconnected by plastic couplings with telescoped joints and with plastic valves in each coupling. The pipeline is enclosed and supported by an adjustably suspended sheet metal housing assembly with a charged wire thereon to keep off fowls.

3,826,468

RESERVE PULL ROD FOR SCUBA TANK

Manfred Schuler, 4100 Patrice Rd., Newport Beach, Calif. 92660

Filed Mar. 26, 1973, Ser. No. 345,187
Int. Cl. F16k *35/00*
U.S. Cl. 251—293 **1 Claim**



The specification discloses a reserve pull rod which eliminates the possibility of accidental release.

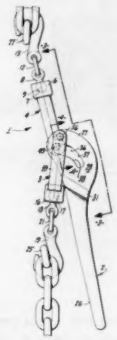
3,826,469

OVER-CENTER LOAD BINDER WITH VARIABLE MECHANICAL ADVANTAGE

Ralph A. Ratcliff, and Bruce E. Ratcliff, P.O. Box 543, both of Belmont, Calif. 94002

Filed Oct. 7, 1971, Ser. No. 187,467
Int. Cl. B66f *3/00*
U.S. Cl. 254—78 **28 Claims**

An improved over-center type load binder having means to provide a variable mechanical advantage in conjunction with binding or unbinding a load and to facilitate unbinding a load in quick release fashion under safe operating conditions. The binder is defined by an elongated operating lever having a clevis configuration at one end, a pivoted yoke mounted adjacent such end, and a movable shank also mounted adjacent such end. Curved slots are formed in the clevis arm of the lever and the shank is provided with a pin which extends into such slots for rolling engagement with edge margins thereof.



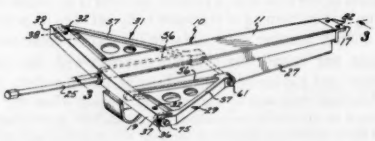
As the lever is moved towards the closed or load binding position, the location and configuration of the slots impart a variable mechanical advantage to the binder. Additionally, during movement of the lever toward the open or unbinding position, initial movement of the lever for a predetermined distance is under full control of the operator so that "flying" of the lever is obviated to minimize the chance of injury to the operator of the binder.

3,826,470

TRAILER JACK

Richard S. Spear, Perrysberg, Ohio, assignor to B-A-L Products Corporation, a Division of Nova Products, Gardena, Calif.

Filed May 21, 1973, Ser. No. 362,491
Int. Cl. B60s *9/02*
U.S. Cl. 254—86 R **7 Claims**



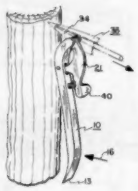
In trailer jacks of the scissors type which include a support leg having one end thereof coupled to an elongated screw mounted for rotation in a horizontal frame, the leg being selectively lowered to a supporting position by advancing the one end along the screw and pivoting at the center thereof to a transverse frame member extending horizontally transverse from the frame, the improvement comprising triangular web structures formed in common with the link members to provide column support to said leg when extended. It is specifically contemplated that the web structure further provide longitudinal flanges along the adjacent interior edges thereof, the flanges forming radial extensions from a common central pivot of the leg. At the distal ends the link members include pivotal joints attaching to the extreme ends of the transverse member. In this manner a column structure is formed between the extreme ends of the transverse member of said frame and the central pivot of said leg for providing lateral support to said leg when extended.

3,826,471

DEVICE FOR PULLING ARROWHEADS FROM IMPLANTATION IN SOLID OBJECTS

Hal L. Orton, 225 S. 100 East; George Duane Vanausdal, 29 E. 200 North, and Robert A. Rowley, 213 E. 200 North, all of Parowan, Utah 84761

Continuation-in-part of Ser. No. 190,755, Oct. 20, 1971, abandoned. This application Jan. 15, 1973, Ser. No. 323,533
Int. Cl. B66f 3/00
U.S. Cl. 254—131 7 Claims



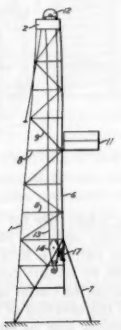
A tool for removing arrows from locations of impaction such as trees, tree stumps and so forth. The subject tool includes a lever member and a retainer member pivoted together, with both of the same including uniquely constructed forward portions that effect, through mutual intercooperation, the retentive gripping of an arrowhead at its fin as well as a progressive tightening action, through use of a cam principal, in increasing such grip as pressure is applied the lever member. Protuberance means preferably in the form of a sharpened point are provided to penetrate or make a detent with respect to the generally soft metal of an arrowhead point. Spring pressure provides initial implacement of the protuberance whereas commencement of hand pressure upon the lever produces an increased retentive engagement of the tool with the arrowhead fin through a camming action of the forward jaw of the lever member and the pivoted retainer member provided with a cooperative cam follower surface. Progressive pressure on the rear of the tool effects a withdrawal of an arrowhead from its impacted position. Additionally, rear edge chisel means may be incorporated for stripping away bark as needed to gain access to an impacted arrowhead.

3,826,472

OIL WELL DERRICK WITH GUIDE TRACK FOR TRAVELLING BLOCK DOLLY

Homer J. Woolslayer, and Cecil Jenkins, both of Tulsa, Okla., assignors to Lee C. Moore Corporation, Tulsa, Okla.

Filed Apr. 15, 1971, Ser. No. 134,127
Int. Cl. B66c 23/60
U.S. Cl. 254—139 8 Claims



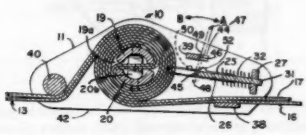
An oil well derrick has two front legs and two downwardly diverging back legs. Cross braces rigidly connect the back legs and also rigidly connect the back legs to the front legs. The front legs extend downwardly from the top of the derrick in parallel relation for at least the major portion of the distance from top to bottom of the derrick and form the rails of a guide track. Mounted on this track is a travelling block dolly that is movable up and down the track. The front of the derrick between the track rails is open to allow stands of pipe to be moved through the track into and out of the derrick.

3,826,473

SLIDABLE BUCKLE ASSEMBLY

John Richard Huber, Holicong, Pa., assignor to Trans Technology Corporation, Saugus, Calif.

Filed Dec. 26, 1972, Ser. No. 318,027
Int. Cl. B65d 67/02
U.S. Cl. 254—164 13 Claims



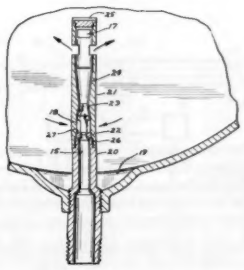
A strap adjusting and tensioning device to secure loads under tension which utilizes a ratchet mechanism for slack take-up and tensioning. The device, which may be positioned anywhere along the strap before wind-up is effected, includes a slotted reel having a pair of ratchet wheels cooperating with a radially-disposed, spring-loaded pawl which, in a preferred embodiment, is protected against accidental disengagement by requiring the use of a separate pawl-tripping tool.

3,826,474

JET AGITATOR ASSEMBLY

Ramon Pareja, Minneapolis, Minn., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Sept. 18, 1972, Ser. No. 289,890
Int. Cl. B01f 5/02, 5/10
U.S. Cl. 259—4 5 Claims



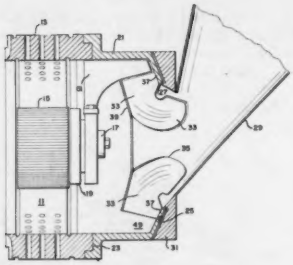
Venturi mixer means comprising a hollow cylindrical body with a rearward inlet port and a forward outlet port, and with replaceable orifice means being disposed rearwardly adjacent said inlet port. Venturi throat means having a throat area greater than the area of the orifice means are disposed forwardly of the orifice, with a plurality of radially disposed inlet openings being formed within said body between the orifice and the throat. The forward outlet port is preferably formed of a plurality of radially disposed openings for enhancing fluid agitation.

3,826,475

DEFLECTOR AND IMPELLER COMBINATION

Robert W. Gilman, San Francisco, Calif., assignor to California Pellet Mill Company, San Francisco, Calif.

Filed July 21, 1972, Ser. No. 273,687
Int. Cl. B01f 9/00
U.S. Cl. 259—14 14 Claims



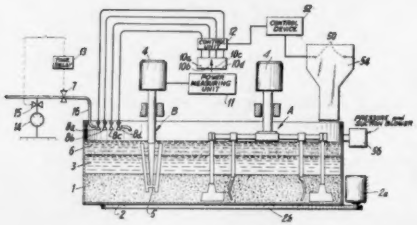
The rotating cone of a pellet mill is provided with a plurality of impellers internally connected by a ring which acts to control feed material entering the mill and distributes the material into a space formed between the cone and the impellers. The feed material is then picked up by a plurality of helical deflectors for more even distribution of the feed material into a pellet mill die.

3,826,476

APPARATUS FOR MOISTENING MIXABLE MATERIALS

Kurt Ahrenberg, Herborn, Germany, assignor to Maschinenfabrik Gustav Eirich, Nordbaden, Germany

Continuation-in-part of Ser. No. 876,461, Nov. 13, 1969, Pat. No. 3,727,894. This application Mar. 7, 1973, Ser. No. 338,956
Claims priority, application Germany, Nov. 15, 1968, 1808998
Int. Cl. B28c 7/04
U.S. Cl. 259—154 3 Claims



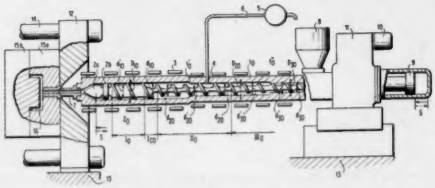
For controlling the moistening of mixable materials, particularly the moistening of foundry casting sand with water, a high-speed low-inertia auxiliary mixing tool is rotated in the sand and the quantity of water added is determined in dependence on the resistance of the sand to rotation of the tool as measured by the power consumption of an electric motor driving the tool. Since the materials used are required to be at a certain starting temperature, the temperature of the material is automatically adjusted prior to commencing the moistening operation.

3,826,477

INJECTION MOLDING MACHINE WITH A VENTING DEVICE

Mahito Kunogi, Aichi-ken, and Teruo Tanikawa, Showa, both of Japan, assignors to Kabushiki Kaisha Meiki Seisakusho, Aichi-ken, Japan

Filed Apr. 10, 1972, Ser. No. 242,671
Claims priority, application Japan, Apr. 13, 1971, 46-23359; Apr. 13, 1971, 46-23360
Int. Cl. B29b 1/06; B29h 1/10; B01f 7/08
U.S. Cl. 259—191 6 Claims



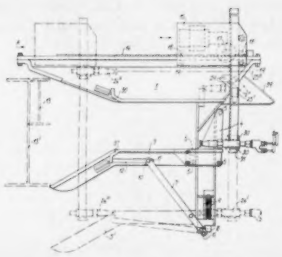
An injection molding machine having a vent opening on the heating barrel is disclosed which eliminates the clogging of the vent opening by the melt. This is attached by a step or steps in the size of the outer diameter of the screw and also steps in the size of the inner diameter of the barrel. The larger diameter portion of the barrel is located forwardly of the smaller diameter portion. The same is true of the screw. The vent opening is located in the portion of the device with a large barrel diameter but a small screw diameter.

3,826,478

CUTTING APPARATUS

Anthony Alan Paine, St. Albans, England, assignor to National Research Development Corporation, London, England

Filed Sept. 20, 1972, Ser. No. 290,736
Claims priority, application Great Britain, Sept. 23, 1971, 44459/71
Int. Cl. B23k 5/00, 7/00
U.S. Cl. 266—23 R 6 Claims



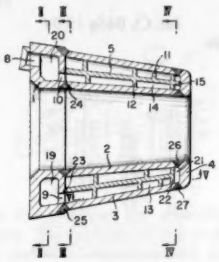
Cutting apparatus, especially for cutting steel joists, reinforced concrete beams and the like in the demolition of buildings. The cutter carries a locating device that may be located upon the joist by remote control, e.g. by the jib of a crane, and once located the cutter is driven around a cutting path appropriate for the severing of the joist. A modified apparatus has two burners, one to either side of the locating device, so that one cutting operation may sever a chosen length of joist, and the central locating device may be positive enough to hold the severed length in the apparatus.

3,826,479

TUYERE FOR A MELTING FURNACE

Kiyohiro Ikegawa, Nara, Japan, assignor to Kurimoto Iron Works, Ltd., Osaka-fu, Japan

Filed Feb. 16, 1973, Ser. No. 333,314
Int. Cl. C21b 7/16
U.S. Cl. 266—41 2 Claims



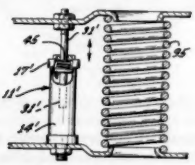
A tuyere for a melting furnace, which comprises inner and outer walls forming a water cooling space therebetween; a cylindrical intermediate wall dividing the water cooling space into an inner water cooling chamber and an outer water cooling chamber, wherein water is introduced into the outer water cooling chamber from the outside of the furnace, circulated into the inner water cooling chamber from the inner end portion at the furnace side of the outer water cooling chamber and discharged from the outer end portion of the inner water cooling chamber; and a guide wall disposed in the water cooling chambers, whereby water circulates at a high speed at least in the portions of the water cooling chambers which are disposed inside the melting furnace.

3,826,480

MULTI-FUNCTIONAL FRICTIONAL-RESISTANCE APPARATUS

Richard W. Johnson, 900 King St., Arbuckle, Calif. 95912, and Robert S. Goodrich, 137 Sierra St., El Segundo, Calif. 90245

Continuation-in-part of Ser. No. 172,029, Aug. 16, 1971, abandoned. This application June 11, 1973, Ser. No. 368,598
Int. Cl. A63b 21/12; B60g 17/06; F16f 7/08
U.S. Cl. 267—9 B 10 Claims



An adjustable energy absorbing device having, among many other uses, that as an exercise device. An elongated housing, closed at one end, contains a slidable member reciprocably movable in and out of the opposite end of the housing. Frictionally encircling the member is a flexible element one end of which is fixed with respect to the housing and the other end of which may be pulled or released to vary the degree of frictional gripping of the member by the element by means operatively associated with the housing. When the device is to be employed in exercising the human body, a pad and strap assembly may be disposed on the closed end of the housing and the outer end of the reciprocable member, thereby to adapt it to be secured between the legs of the user.

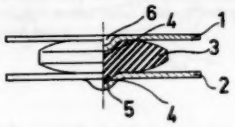
The device can also be employed to attenuate the effects of shocks or impacts which might be encountered in the operation of an automotive vehicle.

3,826,481

SPRING ELEMENT FOR BUFFER SPRINGS

Konrad Oeser, Langenheckstrasse, Germany, assignor to Getefo Gesellschaft fur technischen, Fortschritt, Germany

Filed Oct. 17, 1972, Ser. No. 298,281
Claims priority, application Germany, Oct. 18, 1971, 2151705
Int. Cl. F16f 3/08
U.S. Cl. 267—152 1 Claim



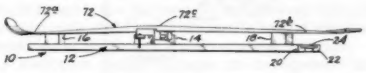
A spring element of the type comprising two metal plates and an elastic rubber body therebetween is provided wherein, instead of the rubber body filling all the space between the metal plates, this body is so constructed that it gradually fills the space as the plates are compressed. The rubber body is thicker at the center than at the perimeter and when round, is substantially of the shape of a discus. The plates have corresponding depressions in the central part, so that they can be stacked one on the other with the depressions serving to align the separate elements. Preferably, the rubber body is cemented or otherwise secured to the plates only in the central part, i.e., at the axis of the body or the corresponding depression or projection in the plates.

3,826,482

PORTABLE SKI WORKBENCH

Donald R. Tourangeau, 6850 S.W. Laber Rd., Portland, Oreg. 97225

Filed Oct. 10, 1972, Ser. No. 296,197
Int. Cl. B25b 1/20
U.S. Cl. 269—88 11 Claims



A portable ski workbench including in combination a base comprising a pair of parallel spaced rails joined adjacent their ends to form a track, a pair of longitudinally spaced ski support members slidably mounted on the track, and a ski holding device secured to the track intermediate the support members. Use of the workbench enables a skier to work on his equipment at locations where no shop facilities are available.

3,826,483

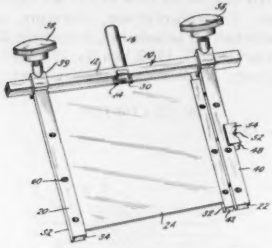
PLANAR WORK HOLDER

William Siegel, 9329 Fraser St., Silver Spring, Md. 20910

Filed Sept. 5, 1972, Ser. No. 286,424
Int. Cl. B25b 3/00, 5/02
U.S. Cl. 269—203 5 Claims

A planar work holder supported only from the rear by a support bar with the work piece being retained between a cross bar and two forwardly extending arms. A tension bar is adjacent one arm secured thereto by pins in a way which allows

the tension bar limited movement toward or away from the arm. Springs and a multiple position detent cooperate to lock tension bar close to arm so that a work piece can be placed



between the tension bar and arm. Release of the detent to a second position permits the springs to bias tension bar away from arm so as to grip the work piece between arm and tension bar with the force exerted by the springs.

3,826,484

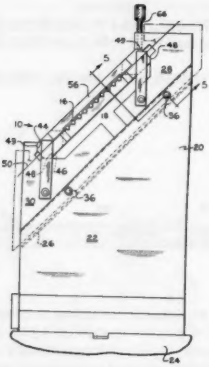
WORKPIECE POSITIONING AND HOLDING APPARATUS

John M. Check, Chelsea, and Gary F. Rupert, Ann Arbor, both of Mich., assignors to Raycon Corporation, Ann Arbor, Mich.

Filed Dec. 7, 1972, Ser. No. 312,815

Int. Cl. B23g *3/18*

U.S. Cl. 269—299 **8 Claims**



Cassette-type apparatus in which a plurality of workpieces can be mounted in fixed positions on a body member prior to mounting of the body member in a fixed position in which work is to be done on the workpieces. The body member functions as the cassette and is provided with a plurality of locating surfaces. An adjustable support unit has surfaces located to support the body member locating surfaces in a position in which the workpieces will be disposed in predetermined positions. The body member is readily clamped in this position on the support unit, released and removed from the support unit and re-assembled in a turned-over position in which the workpieces are in predetermined angularly rotated positions relative to their original positions.

3,826,485

APPARATUS FOR SUCKING UP AND LIFTING THE UPPERMOST SHEET MATERIAL FROM A STACK OF SUCH SHEET MATERIALS

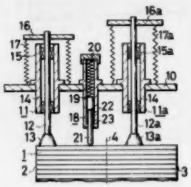
Masashi Shindo, Saitama-ken, Japan, assignor to Pilot Man-Nen Hitsu Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 9, 1973, Ser. No. 330,975

Claims priority, application Japan, July 10, 1972, 47-068802

Int. Cl. B65g *59/04*

U.S. Cl. 271—106 **3 Claims**



A sheet material is sucked at one end and at an intermediate portion between the central portion and the other end thereof, wherein said one end of the sheet material is lifted initially while the sheet material is pressed downwardly at a portion between the sucked portions to cause the sheet material to have a bend between the sucked portions.

3,826,486

SHEET CONVEYOR MECHANISM FOR PRINTING MACHINES

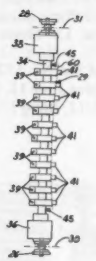
Paul Abendroth, Offenbach/Main, Germany, assignor to Roland Offsetmaschinenfabrik Faber & Schleicher AG

Filed Nov. 24, 1972, Ser. No. 309,172

Claims priority, application Germany, Nov. 23, 1971, 2157993

Int. Cl. B65h *29/04*

U.S. Cl. 271—204 **4 Claims**



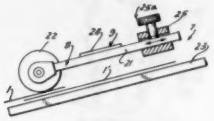
A printing press sheet conveyor having a pair of endless chains mounted for movement around drive sprockets and a plurality of gripper carriages carried between said chains for receiving and transporting sheets between one transfer station adjacent a pair of said sprockets to a remote transfer station. The gripper carriages each include a shaft with a plurality of gripping pads and a corresponding number of grippers mounted for coaction with the pads. The gripper pads of each carriage are of progressively decreasing height from the ends of the shaft to the center thereof so that when the shaft is conveyed around chain support sprockets at a transfer station and deflects slightly outwardly due to the resulting centrifugal forces exerted on the shaft the bearing pads rise to a substantially common level for uniformly receiving a sheet at the transfer station. There is also disclosed an efficient method for producing a gripper carriage with gripper pads of such progressively different heights.

3,826,487

CONTROL APPARATUS AND METHOD FOR TRANSPORTING SHEETS

Karl-Heinz Forster, Dresden; Lothar Vetter, Radebeul, and Helmut Stange, Dresden, all of Germany, assignors to VEB Polygraph Leipzig, Leipzig, Germany

Filed Jan. 24, 1972, Ser. No. 220,204
Int. Cl. B65h *7/04*
U.S. Cl. 271—263 **12 Claims**



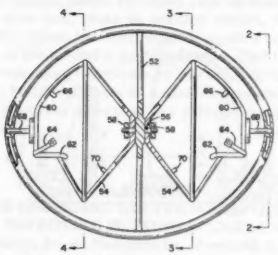
An apparatus and a method for controlling the correct transport of sheets. The thickness of one or several superimposed sheets is sensed to determine how many sheets are simultaneously transported. Transducer means transform mechanical magnitude signals into signals having a different physical quality, for example electric signals, and the transformed signals are evaluated and supplied by an output selector to different outputs which are, respectively, correlated with different numbers of sensed superimposed sheets.

3,826,488

MOBILE RING TOY WITH RELATIVELY MOVEABLE SEAT ELEMENTS POSITIONED THEREIN

Edwin A. Hall, Jr., Lakeland, Fla., assignor to William H. Hermanns, Tampa and Mildred E. Hermanns, Brandon, both of, Fla., part interest to each

Filed Dec. 18, 1972, Ser. No. 316,413
Int. Cl. A63g *29/02*
U.S. Cl. 272—57 T **4 Claims**



A game employing a device which can be ridden in by children. The device employs two rings of like diameter which are interconnected to intersect along a common diameter and which lie in mutually perpendicular planes. Inside these rings are positioned two relatively moveable seat elements. A child may sit in each of the seat elements whereby the rings can be rolled while the seats are maintained upright.

3,826,489

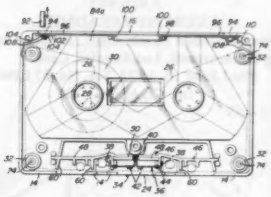
TAPE CASSETTE

Louis W. Watkins, Jr., Cambridge, Mass., assignor to Data Packaging Corporation, Cambridge, Mass.

Division of Ser. No. 109,249, Jan. 25, 1971, abandoned. This application June 14, 1973, Ser. No. 370,034
Int. Cl. G11b *23/10;* **B65h** *75/28*
U.S. Cl. 360/132 **9 Claims**

This disclosure relates to improvements in the construction and operation of tape cassettes of the type which are adapted to be received in a recording and/or playback device. One aspect of the disclosure relates to an arrangement by which a sensor in the recording/playback device may be actuated in response to insertion of the cassette into the device to control operation of the recording circuitry in the recording device. The recording or non-recording mode is selected by a switchable member on the cassette itself which determines whether or not the sensor in the device is or is not actuated.

Also disclosed is an improved arrangement for mounting the pressure pad which maintains the tape loop in firm engagement with the transducer in the recording/playback device. A pair of pressure pads are provided on a specially constructed leaf spring which, when engaged by the head, are wrapped about the head and maintain full and firm contact between the tape loop and the head. The construction of the leaf spring also avoids any tendency for the spring and pad to shift laterally with respect to the head thus orienting the pressure pads properly at all times.



The disclosure further includes improved arrangements for retarding variation in the heightwise position of the tape between the walls of the cassette so that as the tape is wound onto the reel in the cassette, it will do so evenly and smoothly and without forming any high spots. This is achieved by a specially formed sheet on the internal surface of the top and bottom cassette walls, the sheet having resilient, inwardly extending bumps which engage continually the edges of the tape. Even winding of the tape is enhanced further by providing a guide roller in each of the four corners of the cassette and biasing the guide rollers axially toward one or the other of the cassette walls. The provision of a guide roller in each of the cassette corners also minimizes any tendency for tape skew.

Also included in the disclosure is an improved construction for the tape reels about which the tape is wound which avoids the formation of any flats or creases on the wound tape.

The disclosure further includes an arrangement for the outer surface of the cassette which permits a label or the like to be imprinted directly on the cassette thus avoiding the requirement for separate printed labels which thereafter must be bonded to the outer surface of the cassette.

3,826,490

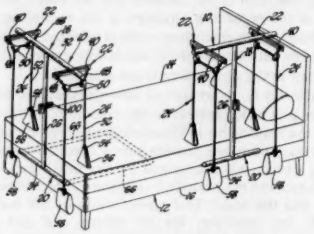
THERAPEUTIC EXERCISE APPARATUS

Vera L. Mossman, 5612 Griggs Dr., Flint, Mich. 48504

Filed Mar. 16, 1972, Ser. No. 235,139
Int. Cl. A61h *1/02;* **A61f** *5/04*
U.S. Cl. 272—58 **18 Claims**

Therapeutic exercise apparatus for insertion beneath a patient occupied bed mattress. The apparatus has a base that is so constructed and arranged that it is conveniently insertable under any part of the bed mattress and has joined to it a weight support which includes a guide device and a cable device. The

cable device has a cable with variable weights on one end and a sling on the other. The weights resist movement of the sling

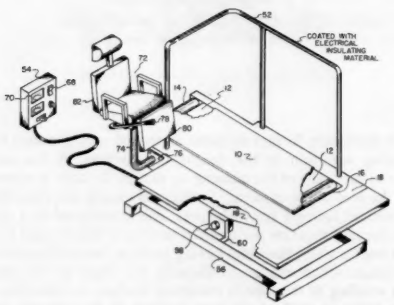


by the user of the apparatus. Additionally, the apparatus affords various adjustments and is foldable to facilitate portability and storage.

3,826,491
EXERCISE TREADMILL

Boyd B. Elder, Redondo Beach, Calif., assignor to Del Mar Engineering Laboratories, Los Angeles, Calif.

Filed June 18, 1973, Ser. No. 371,066
Int. Cl. A63b *23/06*
U.S. Cl. 272—69 **8 Claims**



An exercise treadmill is provided for diagnostic and therapeutic purposes, which includes, among other features, an eddy-current, variable speed drive to obtain a belt speed range from zero to maximum speed, and a differential drive through a slip clutch to the two rollers imparting motion to the belt. Safety of the subject is enhanced by an electrically nonconductive coating on the handrails to eliminate any possibility of grounding electricity through the patient's body. Incorporation of a chair as an integral part of the assembly assures a rest place in appropriate proximity to the walking surface. The treadmill walking surface is positioned and maintained at the desired inclination with minimum apparatus load by virtue of locating the fulcrum at approximately the center-of-gravity. The inclination is displayed on a remote control panel which also provides the capability of controlling all functions of the unit.

3,826,492
SPRING SWING

Robert M. Hagan, 9801 Gwynn Park Dr., Ellicott City, Md. 21043

Filed Jan. 3, 1974, Ser. No. 430,561
Int. Cl. A63g *9/00*
U.S. Cl. 272—85 **7 Claims**

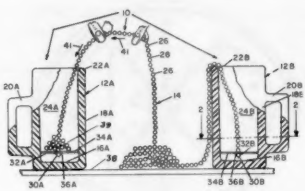
A swing formed of an elongated length of elastic tubing intended to be attached to an overhead beam or tree limb in a manner hanging downwardly therefrom and forming a loop in which a child may sit for swinging movement relative to the supporting beam or tree limb. The tubing may also include a

seat molded integrally therein on which the child may sit. Still further, the tubing may include a pair of spaced apart foot pads molded therein and intended for a child to stand thereon when swinging on the tube.

3,826,493
PLAYTHING COMPRISING MOVABLE SUPPORTS AND A RUNNING LINEAR FLACCID LINE

Ford Crago Pethick, P.O. Box 61, Cranford, N.J. 07016

Continuation-in-part of Ser. No. 87,959, Nov. 9, 1970, abandoned. This application Aug. 18, 1972, Ser. No. 281,922
Int. Cl. A63f *9/00*
U.S. Cl. 273—1 R **16 Claims**

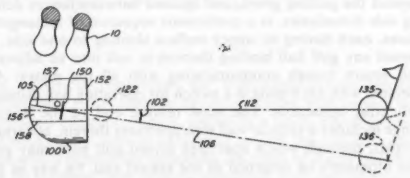


A plaything comprising two mug-shaped receptacles and a linear flaccid line which may be a cord, a chain, a string of beads, or the like. One end of said line is held inside one receptacle, and the other end of said line is held inside the other receptacle, both of said receptacles being at least large enough to house substantially all of said line. Prior to using the plaything, the two receptacles are placed side by side on a horizontal surface and substantially all of said line is hand-fed into one receptacle so as to be amassed in a heap with the last fed-in parts resting on top of the previously fed-in parts. Then, when the receptacle housing most of said line is positioned above the other receptacle, said line — because of gravity — will run from the upper receptacle into the lower receptacle. When most of said line is amassed in a heap in the lower receptacle, the positions of the receptacles are interchanged and the direction of running of said line reversed. A receptacle having a spout for guiding the running of said line is disclosed as a modification. Also different types of lines which are suitable for use as part of the plaything of this invention are illustrated.

3,826,494
SKIING GAME
Richard A. Wainwright, and Stephen A. Wainwright, both of 9704 Kensington Pky., Kensington, Md. 20795
Filed Dec. 27, 1971, Ser. No. 212,321
Int. Cl. A63b *69/18, 71/02*
U.S. Cl. 273—1 R **5 Claims**

Apparatus and method for and of playing a skiing game, the game being played on either snow or in the water. First and second rows of receptacles are positioned on opposite sides of a hazard. Each receptacle in the first row contains a removable object. When the game is played on snow, the hazard is a ridge or bump formed between the first and second rows; and when the game is played in water, the hazard is a crest of a wake left by a boat which passes between the first and second rows. The player passes the outer edge of a receptable in the first row, picks up the object, crosses the hazard, passes the outer edge of a corresponding receptacle in the second row and deposits the object in the receptacle. The player again crosses the hazard, passes the outer edge of another receptable in the first row, picks up another object, recrosses the hazard again, passes the outer edge of another corresponding receptacle in the second row, deposits the other object in that other corresponding receptacle and so on. Additional rows of receptacles and objects can be added on opposite sides of the hazard in order that more than one player can simultaneously play the game.

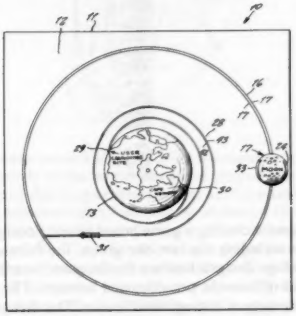
3,826,495
METHOD OF FITTING GOLFER WITH PUTTER AND IMPROVING PUTTING ACCURACY
Vance V. Elkins, Jr., 42 Hampton Dr., Freehold, N.J. 07728
Division of Ser. No. 156,904, June 25, 1971, Pat. No. 3,680,860. This application Mar. 26, 1973, Ser. No. 344,585
Int. Cl. A63b *69/36, 53/00, 53/04*
U.S. Cl. 273—32 R **10 Claims**



An individual's sighting error may be measured when he is adjacent a point and sights a target with the plane formed by the front of his body being substantially parallel to a line between the point and where the target appears to be. A sight line is rotated about the point until it appears that the sight line is pointed directly at the target. The sighting error is detected as an angle between a true line and a projected extension of the sight line and as a directional deviation to the left or right of the true line by the sight line extension.

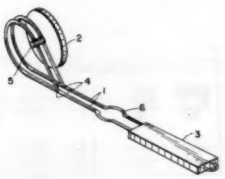
A golf club is provided to compensate for that individual's sighting error. The golf club provided includes a correction line which is sloped relative to the striking face of the club at an angle equal to the individual's sighting error angle. In using the club, the golfer lines up the correction line normal to his front body plane.

3,826,496
EDUCATIONAL SPACE GAME
Frank Summa, 22 Starbuck St., Staten Island, N.Y. 10304
Filed Aug. 20, 1973, Ser. No. 389,855
Int. Cl. A63f *3/00*
U.S. Cl. 273—108 **7 Claims**



An educational and instructive game for children and adults. The game comprises a game board showing a representation of the earth at the center and about which the moon is rotatable by a motor. The game further includes several space ships which travel orbital tracks for movement between the earth and moon.

3,826,497
MAGNETIC SPINNER
Thomas Thomason, 12522 Magoun St., Cedar Lake, Ind. 46303
Filed Feb. 8, 1973, Ser. No. 330,734
Int. Cl. A63b *67/14*
U.S. Cl. 273—109 **6 Claims**



An amusement device comprising a track and a spinner to be moved along said track, said track consisting of two parallel steel wires which are formed into a loop at one end and which are provided with a handle at the other end, said spinner consisting of a plastic disc and a magnetized steel rod inserted and glued at a predrilled hole at the center of said disc; the rod is

placed on the track such that its length extends across the track and the disc being positioned at one side of the track; the handle is then manipulated to cause the disc to rotate whereby the magnetized rod will rollingly cling to the track; movement of the disc too rapidly will cause the rod and disc to fall away from the track.

3,826,498

GOLF BOARD GAME APPARATUS

Francis H. Monek, 120 Madison Bldg., Chicago, Ill. 60602

Filed Jan. 12, 1973, Ser. No. 322,933
Int. Cl. A63f *3/00*
U.S. Cl. 273—134 AD **5 Claims**

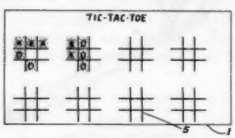
A golf game including a game board bearing designations of a golf hole including the tee, the green, the fairway and the rough. Yardage designations are on the game board as well as designations of hazards, penalties and bonuses. The game also includes four sets of distinguishable dice. The dice of two sets bear numerical indicia and one or more of the dice of each set may be rolled to generate a yardage indication. A table is provided designating various golf clubs and the dice of the first two sets that should be employed to obtain such yardage. The third and fourth sets of dice each consist of a single die, with the die of the third set bearing designations indicating whether a putt has been sunk or missed and the die of the fourth set having designations regarding shot direction.

3,826,499

INVISIBLE INK MARKINGS IN DEFINED AREAS OF A GAME DEVICE RESPONSIVE TO COLOR CHANGING CHEMICAL MARKER

Leon G. Lenkoff, 3203 Alden Dell, Louisville, Ky. 40207

Filed Oct. 4, 1972, Ser. No. 294,821
Int. Cl. A63f *3/00*; G09b *3/02*
U.S. Cl. 273—130 B **5 Claims**



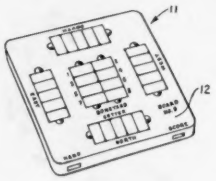
A game device including defined areas having differing invisible ink markings whereby the marking of one of said areas by a player with a color changing chemical marking means provides a differing game scoreable response from the marking of the other area.

3,826,500

BOARD FOR PREARRANGED DOMINO HANDS

James L. Stratta, 96 Maple Leaf Way, Atherton, Calif. 94025

Filed Aug. 24, 1973, Ser. No. 391,450
Int. Cl. A63f *9/20*
U.S. Cl. 273—151 **7 Claims**



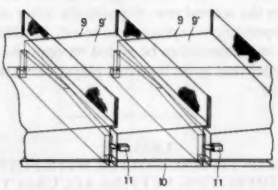
A domino board having areas thereon denominating separate hands and adapted to contain the dominoes thereof and also having a separate area with numbered donmino spaces for containing the remainder or boneyard of dominoes in predetermined sequence together with a score card receptacle.

3,826,501

APPARATUS FOR PLAYING A GAME OF GOLF

Akihisa Hiromachi, 18-12 Kamiya 3-chome, Tokyo, Kita-ku, Japan

Filed Mar. 19, 1973, Ser. No. 342,771
Claims priority, application Japan, Mar. 24, 1972, 47-34650 [U]; Mar. 21, 1972, 47-28359
Int. Cl. A63b *69/36*, *67/02*
U.S. Cl. 273—176 A **1 Claim**

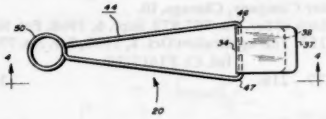


A range for playing a golf game including, at the tee-off end, fairway grass, rough, a bunker, and a green on which putting takes place. The putting green includes indicia thereon designating distances from the cup in the green. Extending beyond the putting green, and located between fences defining side boundaries, is a continuous sequence of rectangular plates, each having an upper surface slanting to one side, to permit any golf ball landing thereon to roll into an adjacent ball return trough communicating with all the plates. Associated with each plate is a switch for operating ball distance indicating apparatus. The most remote end of the driving range includes a vertical wall with apertures therein, at various heights, through which apertures driven golf balls may pass and ultimately be returned to the tee-off end, by way of the aforementioned trough. Ball distance indicating apparatus also is associated with each of the apertures in the vertical wall. Some of the plates are provided with target greens, and hazards, such as a bunker and a water hazard, to simulate the conditions found on golf course fairways.

3,826,502
GOLFING ACCESSORY

Arthur L. Sorge, 10404 Notabene Dr., Parma Heights, Ohio 44130

Filed Feb. 2, 1973, Ser. No. 328,961
Int. Cl. A63b 69/36
U.S. Cl. 273—183 B 1 Claim

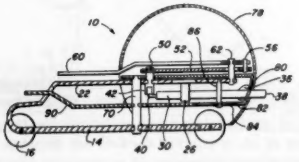


A golfing accessory for removable attachment to the brim of a golfer's cap which includes in combination a clamping member comprising a unitary member having two parallel flat sides of different lengths connected by a bent U-shaped portion. The two flat sides are the parts of the accessory that are adapted to receive the brim of the golfer's cap therebetween. A one-piece wire member is provided which has first and second end portions secured to the bent portion of the clamping member and these two end portions extend outwardly to an intermediate portion of the wire member which is bent into a closed loop. The first and second portions of the wire member preferably extend at an acute angle to the sides of the clamping member so as to appropriately position the closed loop in the line of vision of a golfer wearing the cap so that the line of sight of the golfer goes through the closed loop to view a golf ball on a tee. In order to make the best use of the golfing accessory, it is desirable that the golfer's line of vision not vary from that just described throughout the back-swing and at least through impact of a golf club with the golf ball.

3,826,503
PUTTING STROKE ANALYSER

Robert E. Rawson, 9521 Harriet Ln., Anaheim, Calif. 92804

Continuation-in-part of Ser. No. 251,514, July 21, 1972, Pat. No. 3,788,646. This application Dec. 12, 1973, Ser. No. 424,183
Int. Cl. A63b 69/36
U.S. Cl. 273—183 C 8 Claims

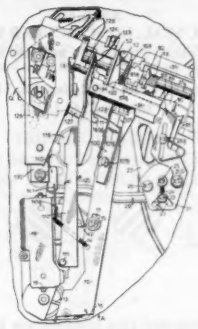


An analytical instrument for indicating putting stroke direction and putter-address deviation angles with respect to an intended direction of putt, including a freely movable carriage with paired sensors extending behind the carriage and linked with a pointer for indicating the angle of putter address prior to stroking and with a simulated golf ball pivotally mounted on the carriage and linked with a pointer for recording putting stroke direction; complete separation of function of the two angle indicating systems is provided through attaching each system independently to the carriage.

3,826,504
AUTOMATIC RECORD PLAYERS

Philip Henry Evans, Stourbridge, and Norman Lane, Halesowen, both of England, assignors to BSR Limited, Warley, England

Filed May 15, 1972, Ser. No. 253,139
Claims priority, application Great Britain, May 13, 1971, 14654/71
Int. Cl. G11b 17/06
U.S. Cl. 274—15 R 10 Claims

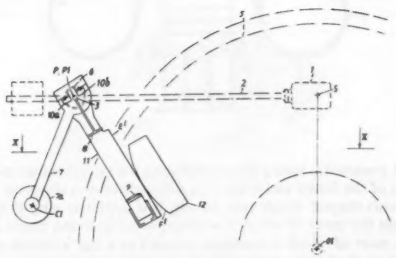


An automatic record player having mechanism to enable a stack of records of the same size to be played automatically using a record-stacking centre spindle, and to enable a single record of a selected size (7 inches, 10 inches or 12 inches) to be played automatically or under manual control using a short stub centre spindle. The mechanism has a single cam shaft carrying a number of cams which control the various movements in a cycle of automatic operations, viz. raising the pick-up arm, moving it inwardly and lowering it to engage the pick-up with the record, raising the pick-up arm after playing the record, swinging it out and lowering it on to its rest, and switching off the record player after playing a single record, or playing the last record in a stack.

3,826,505
PICKUP GUIDANCE MECHANISMS

Richard Wykeham Beaufoy Birch, Strelley Barn, Woodham Mortimer, Maldon, Essex, England

Filed Mar. 22, 1972, Ser. No. 236,911
Claims priority, application Great Britain, Mar. 25, 1971, 7821/71
Int. Cl. G11b 3/38
U.S. Cl. 274—23 A 6 Claims



A pickup guidance mechanism for gramophone disc records comprises a first arm on which the pickup is carried and which is pivoted for rotation in a plane parallel to the record, a

second arm pivoted for rotation in a plane parallel to the record and which carries the pivot of the first arm, sensing means adapted to produce a command signal when the first arm departs from a mean position in which the angle in the plane containing the record subtended at the first arm rotation axis by the pickup stylus and the second arm rotation axis is of a desired magnitude uniquely related to the distance at the time between the stylus and the record center, and correcting means responsive to said command signal, adapted to effect movement of the first arm towards its mean position.

3,826,506
TORIC SEAL, NONCIRCULAR SECTION

Edwin Joseph Eckert, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

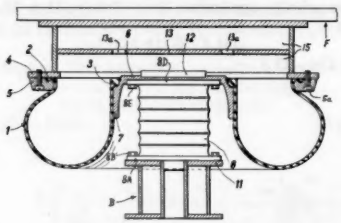
Filed Nov. 29, 1972, Ser. No. 310,245
Int. Cl. F16j 15/34
U.S. Cl. 277—92 **4 Claims**

A retainer-torus-seal ring combination for a face-type seal has a toric member constructed with a noncircular cross section for producing (1) a rapid increase in face load with initial inward axial movement of the retainer with respect to the ring (during initial assembly) and (2) then a relatively constant face load during an extended amount of axially inward movement of the retainer with respect to the seal ring (as occurs during operation of a face seal).

3,826,507
PNEUMATIC SPRING FOR RAILROAD CARS

Werner Brand, Bergisch-Neukirchen, and Hermann Haarkotter, Krefeld, both of Germany, assignors to Waggonfabrik Verdingen AG, Dusseldorf, Germany

Filed Dec. 10, 1971, Ser. No. 206,632
Claims priority, application Germany, Dec. 11, 1970, 2060960
Int. Cl. B61f 5/10, 5/50; F16f 9/04
U.S. Cl. 267—3 **9 Claims**

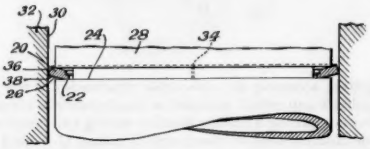


A pneumatic spring for use between the lateral frame members of the frame and bogie in a railroad car or a streetcar has a torus-shaped diaphragm having two coplanar ring-shaped beads the outer of which is sealingly secured to the frame and the inner of which is sealingly secured to a cap which is coupled to the bogie, preferably by way of a rubber spring. The coupling between the cap and the frame member of the bogie may comprise an antifriction bearing or a friction bearing to reduce the stressing and wear on the diaphragm. The interior of the diaphragm communicates with a plenum chamber in the frame member of the frame and the cap is provided with a projection which abuts against a partition in the frame forming the compartments of the plenum chambers in the event of a failure of the pneumatic spring.

3,826,508
RING MANUFACTURE, PRODUCTIVE OF LINE CONTACT SEAL

Norman M. Packard, Des Plaines, Ill., assignor to International Harvester Company, Chicago, Ill.

Division of Ser. No. 757,973, Sept. 6, 1968, Pat. No. 3,587,155. This application Oct. 1, 1970, Ser. No. 77,163
Int. Cl. F16j 9/20
U.S. Cl. 277—216 **3 Claims**

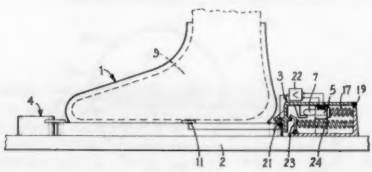


Methods, apparatus, and improved structure having as their common basis the sequence of collapsing a piston ring in a fixture approximating engine bore diameter, and lapping a locality at the side of the ring while so collapsed, until a circumferentially continuous portion—narrow in width and preferably line size—of the side is flat in the range of at least about 10 to 5 light bands. That is to say the out-of-flatness of the circumferentially continuous portion, state another way, is limited to a range equivalent to about 5 to 10 light bands at standard inspection wavelength. One of the broadest methods disclosed is the use exclusively of rings so carefully made and so lap inspected as above on a percentage basis that the inner peripheral edge at the side has all points thereon in coplanarity to a degree equivalent to the stated range to seal in absolute contact in a substantially continuous sealing ring.

3,826,509
SAFETY SKI BINDING

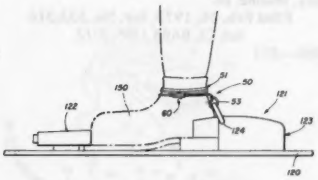
Thomas Gordon Smolka, Wien-Mauer, Austria, assignor to Gertsch AG, Zug, Switzerland

Division of Ser. No. 159,789, July 6, 1971, Pat. No. 3,776,566. This application May 24, 1973, Ser. No. 363,536
Int. Cl. A63c 9/08
U.S. Cl. 280—11.35 M **5 Claims**



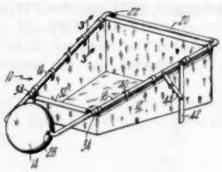
Safety release bindings for action between a ski and a ski boot. Means are provided for utilizing muscular stress of the skier and utilizing a preselected value of same for releasing the binding. In certain embodiments, the muscular stress is measured by the bio-electrical output of the skier's muscles. In other embodiments the muscular stress is measured by physical movement of the skier's foot within or with respect to his ski boot. In one embodiment, a primary measurement is made of such muscular stress while a secondary measurement is made of the stress between the ski boot and the ski, both of said stresses being required to coincide in order to release the ski.

3,826,510
COMBINATION SKI LOCK AND SAFETY STRAP
John C. Halter, 248 Miami, Park Forest, Ill. 60466
Filed May 11, 1973, Ser. No. 359,510
Int. Cl. A63c *11/02*; E05b *73/00*
U.S. Cl. 280—11.37 K **11 Claims**



A combination ski lock and safety strap including an elongated cable having a male member on one end and a female member on the other end forming a lock mechanism. A control mechanism is operative to permit the male member to be securely maintained within the female member while at the same time preventing movement of the lock mechanism to the locked position thereof. The control mechanism is operative to permit easy release of the male member from the female member or to permit the lock to function in the normal manner.

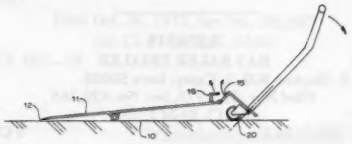
3,826,511
COLLAPSIBLE BEACH TOTE BARROW WITH BALL COMBINATION
William N. Frank, 487 Denslow St., Windsor Locks, Conn. 06096
Filed Nov. 17, 1972, Ser. No. 307,505
Int. Cl. B62d *11/00*
U.S. Cl. 280—36 R **4 Claims**



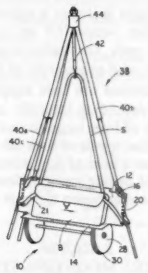
This invention relates to a collapsible beach tote cart fabricated from tubular aluminum having means for releasably securing the wheel combining as a beach ball and having folding means securing the frame elements so as to permit the main side frame structure to be collapsible and movable relative to each other to form a compact, easily storable unit.

3,826,512
CART
Wesley G. Palmer, Corpus Christi, Tex., assignor to Clayton Specialties, Inc., Corpus Christi, Tex.
Filed Feb. 16, 1973, Ser. No. 333,310
Int. Cl. B62d *33/08*
U.S. Cl. 280—43.12 **8 Claims**

A cart for picking up and transporting articles, particularly trays, from a surface, which cart has a wheel-supported platform carrying surface hingedly connected to a rear structural member having a handle and a centered swiveling rear wheel. Pulling the handle rearwardly and downwardly causes the front edge of the platform to drop to the floor level where it may be easily inserted under articles to be picked up.

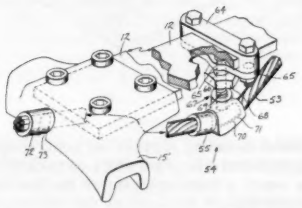


3,826,513
TRIPOD CARRIER
Leopold Wolf, 2320 Bermuda Ln., Hayward, Calif. 94545
Filed Nov. 29, 1973, Ser. No. 420,133
Int. Cl. B62b *1/02*
U.S. Cl. 280—79.1 **6 Claims**



The disclosure is of a camera tripod and equipment transport including a panel of relatively rigid material which may be mounted across a pair of the legs of an erected tripod. The panel has a shelf with restraining means for a camera equipment container. Wheels are mounted on the panel whereby, with the third leg also releasably secured to the transport, the tripod may be tilted back and pulled along on the wheels.

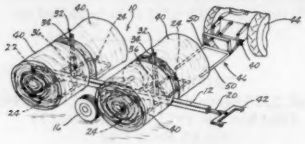
3,826,514
VEHICLE BANKING ARM CONSTRUCTION
Joachim Kolbe, 5126 Haskell Ave., Encino, Calif. 91316
Filed May 9, 1972, Ser. No. 251,831
Int. Cl. B62d *9/02*
U.S. Cl. 280—96.2 **6 Claims**



In a vehicle banking arm suspension each banking arm employs a flexible torsion spring member with means to stiffen it against flexing in the generally vertical direction. The spring specifically disclosed is a single leaf of generally uniform width and thickness disposed substantially horizontal and reinforced

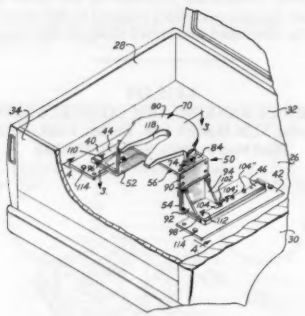
against vertical bending by one or more cables extending from end to end thereof and secured to the ends with an adjustable spacer arching the cable away from the leaf intermediate the ends to provide a truss.

3,826,515
HAY BALER TRIALER
Darrell E. Slayton, R.R. 1, Casey, Iowa 50048
Filed Nov. 29, 1973, Ser. No. 420,265
Int. Cl. B62d *21/04*
U.S. Cl. 280—106 T **8 Claims**



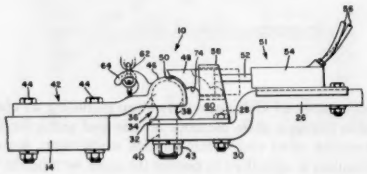
A trailer for hay bales includes a center longitudinally extending frame member supported on a single axle having wheels at its opposite ends. The trailer is pivotal about the axis of the axle. Forwardly and rearwardly of the axle on opposite sides of the frame member are bale supports cantilevered to the main frame and extending laterally outwardly therefrom for supporting a total of four large round bales. The width of the supports is such that a pair of fork lift fingers can straddle the hay supports when a bale of hay is being transferred onto the support. A pair of center spacer telescopic posts are provided on the main frame between the bale supports.

3,826,516
FIFTH WHEEL MOUNTING STRUCTURE
Charles A. Weber, Elkhart, Ind., assignor to Back Products, Inc., Elkhart, Ind.
Filed Apr. 5, 1973, Ser. No. 348,198
Int. Cl. B62d *53/08*
U.S. Cl. 280—407 **9 Claims**



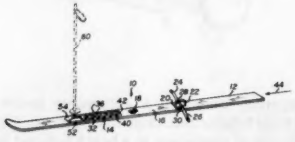
A fifth wheel mounting structure for connecting a trailer such as a recreational vehicle and a pick-up truck having a bed thereon, in which a frame mounted on the bed has a fifth wheel platform thereon for receiving the fifth wheel pin extending downwardly from the forward end of the trailer. The frame is adjustable in height and in forward and rearward positions in the bed in order to properly distribute the weight on the wheels of the two vehicles and over the rear axle of the truck. The frame may include two downwardly extending vertically positioned legs having an adjustment means therein for varying the elevation of the fifth wheel, and may also contain a pair of spaced track means for receiving outwardly extending flanges on the respective legs and for rigidly securing the frame after an adjustment has been made longitudinally in the truck bed.

3,826,517
COUPLING DEVICE
George Dwight Hunter, Des Moines, Iowa, assignor to Deere & Company, Moline, Ill.
Filed Feb. 16, 1973, Ser. No. 333,316
Int. Cl. B60d *1/06, 1/12*
U.S. Cl. 280—511 **5 Claims**



A power operated coupling device includes a ball hitch mounted on the drawbar of a tractor and a ball hitch-engaging member mounted on the tongue of an implement. A keeper which is hydraulically remotely controlled between latching and unlatching positions, confines the tongue of the implement to movement about the ball. The draft links of the tractor carry a pick-up bale which engages a pick-up hook on the tongue of the implement to either raise or lower the tongue into engagement with or disengagement from the ball hitch.

3,826,518
BOOT SCRAPER FOR APPLICATION TO A SKI
Don B. Hennig, Roz Box 418, Aldamont, N.Y. 12009
Filed Aug. 2, 1972, Ser. No. 277,168
Int. Cl. A63c *5/06*
U.S. Cl. 280—11.13 T **5 Claims**



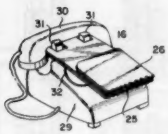
A boot scraping means for application to a ski includes an elongated member connected to the upper surface of the ski in front of the toe binding. The member is provided with upwardly projecting parts which extend across the ski in several directions relative to the longitudinal axis of the ski. The parts are rigid and are adapted to receive the lower part of a ski boot from substantially any direction in a frictional engagement to thereby dislodge snow from the boot. Control of the ski is provided during use of the boot scraper by an upwardly projecting crown piece having a receptacle large enough to receive a ski pole in a snug engagement. Pressure on the ski pole restrains movement of the ski while the boot is passed over the boot scraper.

3,826,519

TELEPHONE PAD

Thomas W. Gavin, 3380 Merrick Rd., Seaford, 11783, and Arthur S. Friedman, 2144 Seneca Dr., Merrick, both of N.Y. 11566

Filed Mar. 21, 1973, Ser. No. 343,242
Int. Cl. G09f 3/04
U.S. Cl. 281—15 1 Claim



A looseleaf pad for listing selected telephone numbers is mounted on binder means that provides a hinge connecting the aligned outer ends of a rectangular blank of light cardboard or the like which is doubled upon itself on a center line of fold to constitute a two-ply pad holder. The holder is apertured to engage over the front pair of handpiece cradle posts of a cradle type telephone, or to engage over the ends of the handpiece holder fork lever of a conventional wall mounted telephone.

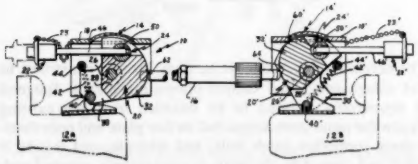
Each section of the blank between its outer end and the center line of fold is formed with an additional line of fold parallel to the center line, whereby the portions of the sections between the center line and the additional lines of fold may be flattened in a common plane to provide the base or floor of a tent-shaped structure whereof the remaining portions of the sections are the sides and the binder is the ridge. In this condition, the assembly is usable independently of a telephone, simply as a desk or table top pad and holder.

3,826,520

MECHANICAL DOOR INTERLOCK SYSTEM

Gerald D. Ross, Des Plaines, and Douglas E. Cromwell, St. Charles, both of Ill., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 21, 1973, Ser. No. 343,315
Int. Cl. E05b 53/00, 63/14; E05c 19/10
U.S. Cl. 292—30 8 Claims



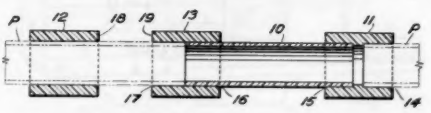
A mechanical door interlock system having a mechanical locking section used to prevent the opening of one door to a chamber or the like if an opposing door is not closed. The opening motion of one door allows a cam plate, under tension, to rotate and move a connecting rod. The motion of this rod prevents the rotation of the locking section of the other door, with the effect of locking this door.

3,826,521

GLUED REPLACEMENT UNIT FOR REPAIRING RUPTURED PIPE

Paul C. Wilhelmsen, 281 Livorna Heights Rd., Alamo, Calif. 94507

Filed Oct. 30, 1972, Ser. No. 301,947
Int. Cl. F16l 13/00, 47/00
U.S. Cl. 285—15 1 Claim



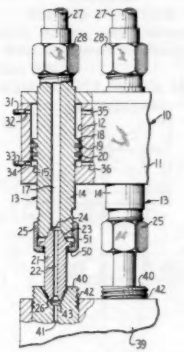
A method of effecting a repair to a damaged section of a rigid, plastic pipe system, utilizing a short replacement section, a conventional coupling and two sleeve type couplings.

3,826,522

QUICK ACTING CONTACT COUPLING

Stanley G. Dawes, Oakland, Calif., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Apr. 28, 1972, Ser. No. 248,606
Int. Cl. F16l 35/00, 28/50
U.S. Cl. 285—18 11 Claims



A quick-acting contact coupling for making a fluid-tight connection between a source of pressurized fluid and a work member, such as a fuel pump. A pressure actuated mechanism including a piston member having a contact sealing member connected thereto accomplishes a quick fluid-tight connection between the coupling assembly and the work member without the use of threaded fasteners or connectors. The contact sealing member has a hardened tip portion and a relatively flexible stem portion which allows minute alignment adjustments between the sealing and work members.

3,826,523

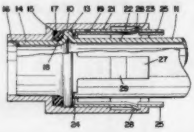
QUICK CONNECT TUBE COUPLING JOINT

John T. Eschbaugh, Chesterland, Ohio, assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Nov. 22, 1972, Ser. No. 308,804
Int. Cl. F16l 35/00
U.S. Cl. 285—39 7 Claims

A tube coupling joint in which a beaded tube with a packing ring and a collet with spring fingers mounted on the tube is attached to a coupling body by simply pushing the tube into the body. Upon such insertion the collet fingers spring radially behind a shoulder in the nut to prevent withdrawal of the tube.

The spring fingers are accessible from the exterior of the body to radially deflect the same inwardly for releasing the collet to permit withdrawal of the tube from the housing. Also, at least one of the collet fingers is axially offset from the others for en-



gaging the body shoulder after release of the initially engaged collet fingers and breaking of the coupling seal by partial withdrawal of the tube to thus provide a safety measure in that the tube is retained by the coupling while fluid pressure is being bled therefrom.

3,826,524

FLEXIBLE CONNECTION FOR CONVEYING PIPES

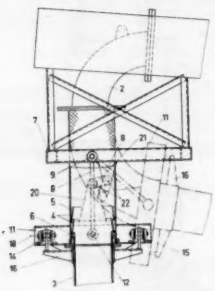
Johann Heinrich Abderhalden, Dietikon, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Dec. 18, 1972, Ser. No. 316,349

Claims priority, application Switzerland, Dec. 21, 1971, 18772/71

Int. Cl. F16l *3/00*

U.S. Cl. 285—61 **7 Claims**



A flexible connection for use between two pipes of a suction conduit to convey gritty substances, the angle between the two pipes being variable, comprises a frame pivoted to one pipe about a first axis transverse to the central axis of one pipe, a carrier spaced apart from the frame fixed in relation to the other pipe, means interconnecting the frame and the carrier, said means being pivoted to the frame and to the carrier on substantially parallel second axes, the pivot axis between the said interconnecting means and the frame being substantially perpendicular to the first axis, an articulated conduit portion including a series of annular members articulated together and a flexible hose surrounding said annular members and connected to said two pipes.

3,826,525

WELL PUMP TORQUE ABSORBER ASSEMBLY

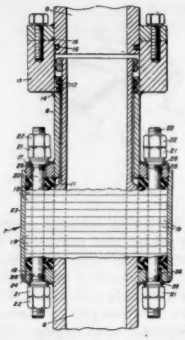
James N. Zehren, Bartlesville, Okla., assignor to TRW, Inc., Cleveland, Ohio

Filed Aug. 27, 1971, Ser. No. 175,634

Int. Cl. F16l *27/00*

U.S. Cl. 285—223 **4 Claims**

A torque absorber assembly for use with a conventional centrifugal pump installation for liquid producing wells which are of insufficient depth to accommodate a normal liquid discharge pipe of a length to provide the required absorption of torque produced by the pump in operation. The assembly comprises a series of annular rubber-like disc rings which are arranged in concentric superposed relation and surround a relatively short discharge extension leading from the pump discharge head. The disc rings are mounted between upper and lower circular flange plates, the lower plate being affixed to and extending radially from a discharge extension pipe leading from the pump discharge head and the upper plate



being affixed to and extending radially from an adapter depending from and attached to the lower end of the main well discharge line leading to ground level. A series of bolts having threaded tightening nuts, extend through the plates and the intervening disc rings for adjusting the degree of friction between the disc rings and retaining the disc rings in the proper relation. The entire assembly is enclosed within a cylindrical housing secured to the lower disc ring supporting plate.

3,826,526

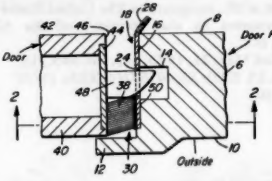
LATCH BOLT PROTECTOR

George B. Wepsala, Jr., 2398 N.E. 28th St., Lighthouse Point, Fla. 33064

Filed Mar. 16, 1973, Ser. No. 341,949

Int. Cl. E05c *21/00*

U.S. Cl. 292—346 **3 Claims**



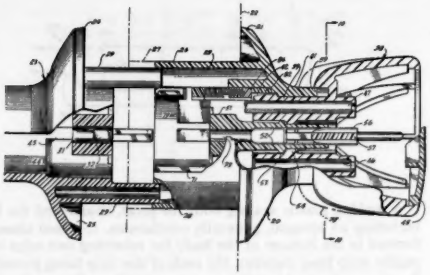
The hereindisclosed concept pertains, broadly construed, to novel safeguarding and tamper-preventing means designed and structurally adapted to be installed in a gap existing between the usual jamb-supported striker plate and coordinating door supported latch bolt, and wherein said means is located and carried by the jamb, is associatively oriented with the latch bolt, is made up of tough interrelated brush-bristles and intercepts and blocks access to the latch bolt. The space-spanning bristles provide a formidable guard and prohibit unauthorized insertion of the commonly used plastic probing card or any equivalent jimmying implement, thus rendering the latch bolt virtually inaccessible. Specifically, the bristles can (1) be permanently built into and as part of the striker plate, (2) fastened as an accessory to a surface of the door-jamb, or (3) made up and sold as an applicable attachment for said striker plate.

3,826,527

DETENT FOR LOCKING KNOB OF A PRIVACY LOCK

Joe E. Ramsey, Walnut, Calif., assignor to Acme General Corporation, Monrovia, Calif.

Division of Ser. No. 261,516, June 9, 1972. This application Oct. 24, 1973, Ser. No. 409,236
Int. Cl. E05b *13/00*
U.S. Cl. 292—359 4 Claims



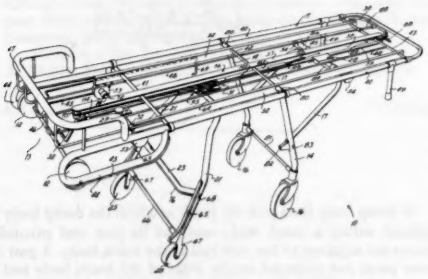
A door latch, the knobs of which may be turned either clockwise or counterclockwise for operating the latch bolt is described. One of the knobs engages the corresponding escutcheon when the knob is pushed towards the door to prevent rotation and provide a privacy lock. Translation of the locking knob is inhibited by an elastic detent in the form of bendable fingers on the knob escutcheon engaged by a bullet-shaped member on the knob. The door latch is made of injection molded plastic and the two escutcheons are held together by a single axial screw.

3,826,528

ONE MAN MULTI-LEVEL CART

Donald East, Greenfield, Ohio, assignor to Burt Weil, Cincinnati, Ohio

Filed Sept. 22, 1972, Ser. No. 291,205
Int. Cl. A61g *1/02*
U.S. Cl. 296—20 14 Claims



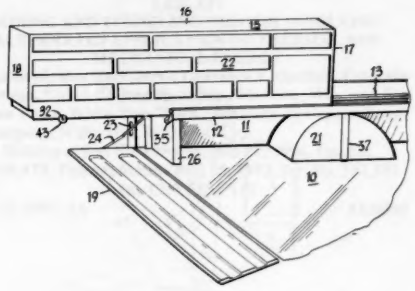
A one man multi-level cart having forward and rearward depending legs and slidable braces for the legs, the braces normally being locked and being releasable by the operator. The forward legs are also slidably mounted to the cart frame. The cart is adapted to be collapsed as by thrusting it into the rear of a vehicle, collapse being effected by the legs swinging rearwardly and their braces sliding along the frame. The level of the cart is adapted to be adjusted, adjustment being effected by the legs spreading apart, through the sliding of the brace for the rear legs and the rearward sliding of the upper end of the forward leg.

3,826,529

TRUCK BODY WITH SUSPENSION RACK

Robert J. Wood, 3938 Sassafras St., Erie, Pa. 16508

Filed May 12, 1972, Ser. No. 252,564
Int. Cl. B60p *1/52*; B62d *33/04*
U.S. Cl. 296—37 R 2 Claims



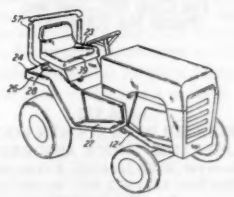
An automotive vehicle body, such as a pickup truck, with a rack for tools or the like. The rack is in the form of a cabinet and supported on a track. The rack can be pulled completely from the vehicle to provide access to the contents of the rack.

3,826,530

RIDING TRACTOR

Knud H. Hoffmeyer, Racine, and Sherman C. Heth, Sturtevant, both of Wis., assignors to Jacobsen Manufacturing Company, Racine, Wis.

Filed July 3, 1972, Ser. No. 268,519
Int. Cl. B60n *1/08*
U.S. Cl. 296—65 R 10 Claims



A riding tractor having ground wheels supporting spaced-apart beams forming the tractor frame, and having a forwardly located engine and a rearwardly located operator's seat. The beams extend inclined upwardly, and a member connects the rear portions of the beams, and the operator's seat is slidably supported on tracks which are on an incline parallel to that of the beam rear portions. The member connecting the beams also extends downwardly and supports the rear wheel axle, and a sheet piece is interposed between the beam rear portions and the operator's seat, and the sheet piece has lateral portions which extend over the rear wheels to present rear fenders. The engine is located over the front wheel axle, and the operator's seat is over the rear wheel axle, and provision is made for inclusion of a roll-bar.

3,826,531

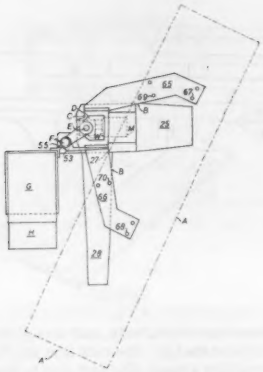
DENTAL CHAIR

Richard W. Page, P.O. Box 258B, Chatham, Mass. 02633

Filed May 15, 1972, Ser. No. 253,395
Int. Cl. A47c *7/62*; A61c *19/00*
U.S. Cl. 297—188 8 Claims

The patient-supporting structure of the chair is carried on a vertically adjustable platform which rides up and down on a

laterally displaced post; the platform is kept level by vertically spaced opposed rollers riding on vertical tracks formed on the post, there being two sets of rollers acting in planes at right angles to each other so that lateral displacement and angular

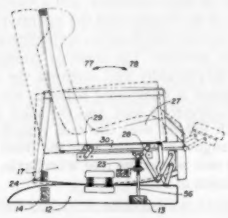


movement are prevented. The platform may move down practically to floor level. An instrument console is mounted for horizontal pivoting and vertical sliding on an offset shaft and has a lost motion connection to the platform so that it follows it only in the upper part of its adjustment range.

ERRATUM

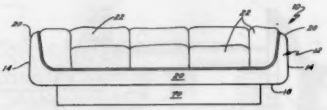
For Class 297—248 see:
Patent No. 3,826,453

3,826,532
ROCKING RECLINER WITH ROCKER LOCK AND ANTI-OVERTURN SHOCK ABSORBER
Daniel F. Caldemeyer, 4300 Jennings, Evansville, Ind. 47712
Filed Nov. 16, 1972, Ser. No. 307,087
Int. Cl. A47c *3/02*
U.S. Cl. 297—270 **13 Claims**



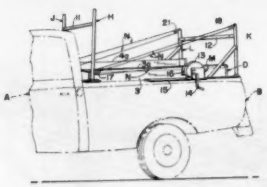
A rocking recliner chair includes a lock for locking the chair with respect to the base at any of a number of possible attitudes, and has a shock absorber associated with the chair and base to limit the extent of travel during rocking of the chair. It is a simplified footrest mechanism and a simplified full bed mechanism.

3,826,533
ARTICLE OF FURNITURE
William C. Andrus, Wyoming, and Thomas H. Wienszkowski, Grand Rapids, both of Mich., assignors to Steelcase Inc., Grand Rapids, Mich.
Filed Aug. 31, 1972, Ser. No. 285,435
Int. Cl. A47c *4/02, 7/00*
U.S. Cl. 297—445 **14 Claims**



A molded plastic seating body for sofas, chairs, and the like including an integral, generally continuous, recessed channel formed in the bottom of the body for receiving one edge of a plastic strip base member, the ends of the strip being joined to form a continuous band-type supporting base for spacing the body from a supporting surface. The channel includes spaced, enlarged areas for receiving securing means for securing the strip member in the channel. The body includes additional recessed hand holds intermediate the channel and the periphery of the bottom of the body for the grasping and lifting thereof.

3,826,534
DUMP BODY FOR PICK-UP TRUCK
Gotfried G. Ruff, P.O. Box 57, Wilseyville, Calif. 95257
Filed May 9, 1973, Ser. No. 358,658
Int. Cl. B60p *1/00*
U.S. Cl. 298—1 A **5 Claims**



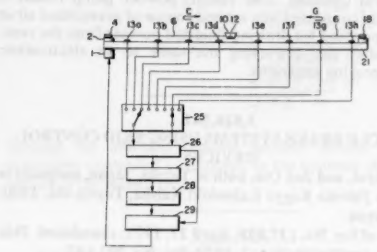
A dump body for a pick-up truck in which the dump body is placed within a truck body and has its rear end pivotally mounted adjacent to the rear end of the truck body. A pair of rear posts are mounted on the sides of the truck body and a pair of front posts are also removably secured to the truck body sides. Pulleys are mounted at the tops of the rear posts and a cable mechanism has a cable extending from a winch on the truck body to a pulley on a front post and then the cable extends to a top pulley on a rear post and from there the cable is passed through two pulleys mounted at the two front corners of the dump body. The cable then extends to the top pulley of the other rear post and the end of the cable is secured to the other front post. This cable arrangement provides a compound lifting effect to the front of the dump body when the cable is wound upon the winch drum. The dump body has a spreader gate and a pair of laterally swingable half covers normally close the top of the dump body.

3,826,535

COAL PLANER AUTOMATIC REVERSING DEVICE

Masao Fujimori, Tokyo, and Shigeo Nakajima, Kushiro, both of Japan, assignors to Taiheiyo Coal Mining Co., Ltd., Tokyo, Japan

Filed Feb. 12, 1973, Ser. No. 331,565
Int. Cl. E21c 27/34
U.S. Cl. 299—1 3 Claims



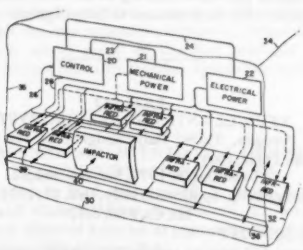
A coal planer having an elongated stationary main body, forward and rear sections with a gate side drive frame extending between these sections along one side thereof, upper and lower portions to said main body, and a coal planer body extending along said one side for longitudinal motion. A drive chain extends along said frame on said one side to drive said coal planer body, with driver units coupled to drive said chain including a ranging arm towards said rear section and a return wheel towards said front section. A conveyor trough is operatively coupled to and driven by said chain. On the upper portion is a magnet. A plurality of reed switches on said conveyor trough are disposed so as to magnetically couple to said magnet as they pass before said magnet. Reversal means are operatively coupled to said reed switches and to said driver units.

3,826,536

MINING AND TUNNELING PROCESS INVOLVING ALTERNATED APPLICATION OF THERMAL AND MECHANICAL ENERGY

James Boyd, New York, N.Y.; Lawrence A. Garfield, Colorado Springs, Colo.; Clifford Hanninen, Madison, Wis., and Eugene Maki, White Pine, Mich., assignors to Cooper Range Company, White Pine, Mich.

Division of Ser. No. 100,213, Dec. 21, 1970, Pat. No. 3,759,575. This application Feb. 15, 1973, Ser. No. 332,550
Int. Cl. E21c 37/18
U.S. Cl. 299—14 10 Claims



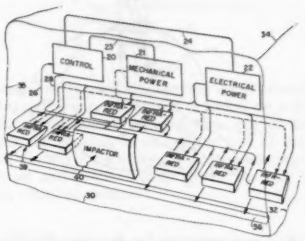
A mining or tunneling apparatus is provided for continuous underground excavation through rock of relatively high to relatively low hardness. The apparatus comprises impactors and heaters having alternately operative and inoperative modes which are selected in reference to the condition of the excavation face. Functional relationships between the applied thermal and mechanical energy are given. Optional separation of ore and gangue at the mining face is outlined.

3,826,537

MINING AND TUNNELING PROCESS INVOLVING ALTERNATED APPLICATION OF THERMAL AND MECHANICAL ENERGY

James Boyd, New York, N.Y.; Lawrence A. Garfield, Colorado Springs, Colo.; Clifford Hanninen, Madison, Wis., and Eugene Maki, White Pine, Mich., assignors to Copper Range Company, White Pine, Mich.

Division of Ser. No. 100,213, Dec. 21, 1970, Pat. No. 3,759,575. This application Feb. 15, 1973, Ser. No. 332,551
Int. Cl. E21c 37/18
U.S. Cl. 299—14 8 Claims



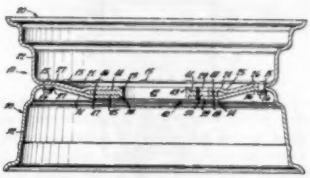
A mining or tunneling apparatus is provided for continuous underground excavation through rock of relatively high to relatively low hardness. The apparatus comprises impactors and heaters having alternately operative and inoperative modes which are selected in reference to the condition of the excavation face. Functional relationships between the applied thermal and mechanical energy are given. Optional separation of ore and gangue at the mining face is outlined.

3,826,538

AUTOMOTIVE WHEEL

Ray W. Lipper, Newport Beach, Calif., assignor to Center Line Tool Co., Inc., Los Angeles, Calif.

Filed Feb. 9, 1973, Ser. No. 331,041
Int. Cl. B60b 3/08
U.S. Cl. 301—63 DD 1 Claim



A drawn aluminum wheel for use with automotive vehicles. The present wheel comprises: first and second generally cupshaped wheel halves, each of the wheel halves having a center section, an integral rim section, and a central opening in the center section, the wheel halves being positioned with the center sections back-to-back and the central openings coaxial; and a centering element including a disc-shaped portion having a central opening therein and an integral cylindrical collar along the inner circumference thereof, the centering

element being positioned between the wheel halves with the collar extending into the central openings therein, thereby aligning the wheel halves. O rings positioned within grooves on opposite sides of the disc-shaped portion of the centering element form an air-tight seal between the centering element and each of the wheel halves. The wheel halves are connected together, preferably by rivets.

3,826,539

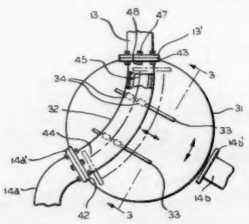
METHOD AND APPARATUS FOR DIRECTIONAL SWITCHING OF PNEUMATIC MATERIAL TRANSPORT PIPING

Robert Irwin Kunz, Verona; John Gibb Oram, Gibsonia, and Eberhard G. Schempp, Pittsburgh, all of Pa., assignors to Pennsylvania Engineering Corporation, Pittsburgh, Pa.

Filed Oct. 10, 1972, Ser. No. 295,862

Int. Cl. B65g *53/36, 53/56*

U.S. Cl. 302—27 **14 Claims**



A method and apparatus for directing the flow of material between a plurality of storage bins and metallurgical vessels each having a coupling pipe connected thereto. Each of a plurality of interconnected directional switches is coupled to at least one storage bin and vessel and including rotatably mounted pipe coupling sections for connecting alternate flow paths between various bins and vessels when in various alternate positions.

3,826,540

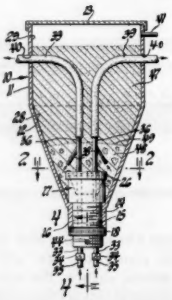
POWDER HOPPER FOR ELECTROSTATIC POWDER SPRAYING APPARATUS

Frederick K. Jensen, Farmington, Mich., assignor to Elektro-Ion, Inc., Farmington, Mich.

Filed Mar. 21, 1973, Ser. No. 343,229

Int. Cl. B05b *5/02*

U.S. Cl. 302—57 **6 Claims**



A powder hopper for supplying fluidized powder to an electrostatic powder spraying apparatus which includes a hopper body having a conical chamber at the lower end thereof, in which is operatively mounted at least one venturi powder pump means. A fluidizing air chamber is operatively mounted in the lower end of the hopper body, and it has an open upper end which is covered by a diffuser membrane. The venturi powder pump means is provided with an intake conduit disposed above the diffuser membrane. The fluidizing air chamber is operatively connected to a first source of pressurized air for distributing pressurized air into the conical chamber to agitate and fluidize the powder in the lower end of the conical chamber. The venturi powder pump means is operatively connected to a second source of pressurized air at a higher pressure for drawing fluidized powder from the conical chamber and conveying the same to an electrostatic powder spraying apparatus.

3,826,541

VEHICLE BRAKE SYSTEMS USING SKID CONTROL DEVICES

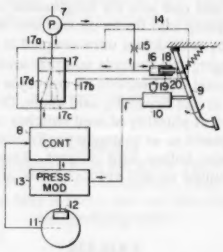
Hiroshi Arai, and Jun Ota, both of Toyota, Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, Aichi-ken, Japan

Division of Ser. No. 137,858, April 27, 1971, abandoned. This application Nov. 2, 1972, Ser. No. 303,142

Claims priority, application Japan, May 1, 1970, 45-36802

Int. Cl. B60t *8/00*

U.S. Cl. 303—21 F **12 Claims**



In the disclosed brake system, a control circuit that responds to deceleration of a wheel actuates an oil pressure modulator when the control circuit determines the wheel is likely to slip or skid. The oil pressure modulator then eases the braking pressure in the wheels' brake cylinder. A switch responding to effort applied to the brake pedal enables the control circuit only when the brake pedal is actually depressed hard enough to try to stop the vehicle. The switch disables the control circuit at other times. The switch prevents the circuit from easing the brake pressure in response to rapid wheel decelerations that have nothing to do with braking, such as decelerations due to downward shifting of gears.

3,826,542

VEHICLE ANTI-SKID BRAKING SYSTEM

Marco Peruglia, Turin, Italy, assignor to Fiat Societa Per Azioni, Turin, Italy

Filed Dec. 6, 1972, Ser. No. 312,521

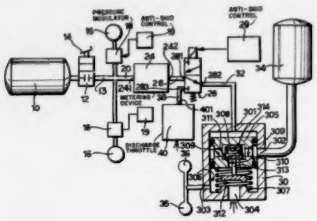
Claims priority, application Italy, Dec. 11, 1971, 71050/71

Int. Cl. B60t *8/12*

U.S. Cl. 303—21 F **1 Claim**

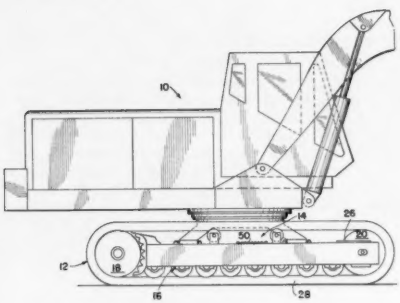
An anti-skid braking system for a vehicle according to this invention has a main source of fluid pressure connected to a first (e.g. front) brake actuator group of a vehicle and controlled externally, and an ancillary source of fluid pressure connected to a second (e.g. rear) group of brake actuators, or trailer brake actuators, via a repeater valve which is controlled

by the pressure of the main pressure source. In this invention the main pressure source is connected to the repeater valve



through an anti-skid braking control system which is preferably controlled in response to the dynamic state of the wheels of the second group.

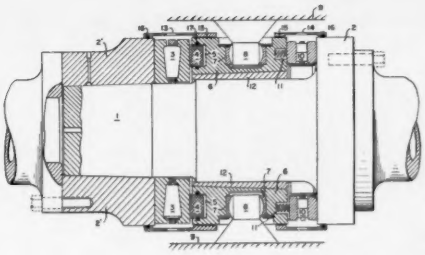
3,826,543
TRACK TENSIONING AND RECOIL APPARATUS
Thomas P. Muller, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.
Filed Oct. 13, 1972, Ser. No. 297,196
Int. Cl. B62d *55/30*
U.S. Cl. 305—10 **12 Claims**



A track tensioning and recoil system is used in a vehicle having a track frame, front and rear rotatable members associated therewith, and a track entrained thereabout. The system includes a cylinder and piston combination which defines a chamber into which is pumped pressurized grease or the like. The piston, upon movement thereof due to the introduction of such pressurized grease, urges a push rod separate from the piston and connected to the front rotatable member to move the front rotatable member away from the rear rotatable member to tension the track. The cylinder is associated with the rear rotatable member by means of a recoil spring which allows recoil of the first rotatable member toward the second rotatable member against the biasing force thereof.

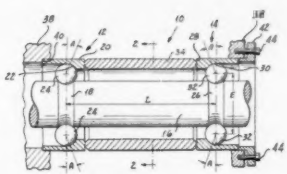
3,826,544
TRUNNION MOUNTED MARINE THRUST BEARING/VIBRATION REDUCER
Hugh G. Anderson, Jr., Lanham; Jai R. N. Rajan, Bowie, both of Md., and Wade H. Morse, Portsmouth, R.I., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 4, 1973, Ser. No. 357,296
Int. Cl. F16c *17/04*
U.S. Cl. 308—160 **7 Claims**

The instant invention is a marine bearing device which compensates for a shaft misalignment. No housing is necessary for the bearing since the flanges of the shaft are used as bearing surfaces and partial enclosures of the bearing apparatus. This saves space and eliminates the need for traditionally used hardware. Two concepts are melded to become substance of the instant invention and provide an exceptionally efficient vibration reducing thrust bearing. First is the concept of using



two shaft flanges as thrust collars so that both forward and aft thrust bearings can be serviced and mounted on a single and compact vibration reducer housing. The use of the single vibration reducer housing facilitates the use of the second concept which is that of permitting the entire bearing to rotate freely about an axis perpendicular to the shaft by trunnion mounting the vibration reducer.

3,826,545
READILY ASSEMBLED TEMPERATURE COMPENSATED DUAL ANGULAR CONTACT BEARING ASSEMBLY
Lewis W. McKee, Brookfield, Conn., assignor to The Borden Corporation, Danbury, Conn.
Filed May 24, 1972, Ser. No. 256,498
Int. Cl. F16c *13/00*
U.S. Cl. 308—189 R **7 Claims**



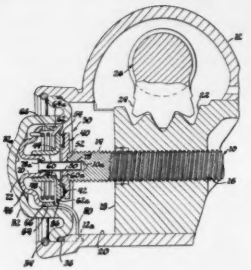
An assembly of a pair of spaced ball bearings in which axially spaced circumferential grooves formed in a shaft provide spaced inner raceways for receiving sets of balls which are disposed in angular contact raceways of outer rings the raceways of which open axially away from each other and in which a spacer is so constructed as to permit it to be inserted between the outer rings after the bearings are assembled on the shaft and in which the spacer is selected to have a length providing a ball contact angle the tangent of which is the ratio of the diameter of the locus of the ball centers of each set to the axial distance between the ball centers of the sets so that the change in residual clearance of the balls in the raceways tends to be reduced owing to radial expansion of balls and shaft at approximately the rate at which the clearance tends to be increased as a result of axial shaft expansion.

3,826,546

SELF-ADJUSTING THRUST BEARING ASSEMBLY

Charles N. Hay, Sandusky, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 21, 1973, Ser. No. 362,481
Int. Cl. F16c 19/10
U.S. Cl. 308—234 5 Claims



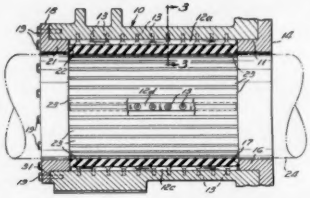
A thrust bearing assembly as for the shaft of the power steering gear of a vehicle, the assembly including a thrust plate engaging the screw end of the steering shaft journalled in the steering gear housing, a needle bearing assembly being positioned between the thrust plate and a pair of cup-shaped cam elements, one of which is centered and held axially within the steering gear housing by an end cap of the housing, a torsion spring being connected at opposite ends to the cam elements to cause them to rotate relative to each other to effect axial spreading of the cam elements for taking up end play of the steering shaft.

3,826,547

WATER LUBRICATED RUBBER BEARING

Donald W. Finefrock, Burton, Ohio, assignor to The Johnson Rubber Company, Middlefield, Ohio

Filed Apr. 27, 1973, Ser. No. 355,206
Int. Cl. F16c 27/02
U.S. Cl. 308—238 7 Claims



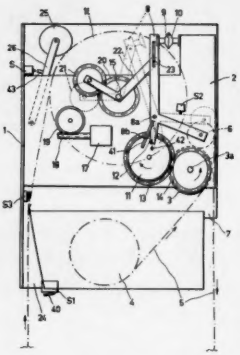
A water lubricated bearing is disclosed providing a housing formed with a cylindrical bore in which a plurality of symmetrically spaced keys are mounted. A compliment of staves formed entirely of elastomeric material are positioned in the bore and directly compressed by a removable compression head to cause tight engagement between the bore and keys. Removal of the compression head allows the staves to assume their unstressed condition in which clearance is provided with respect to both the bore and the keyways.

3,826,548

DISPENSER FOR HAND TOWELLING

Conrad W. Schnyder, Triesenberg, Liechtenstein, and Danilo Cambiaghi, Cologno Monzese, Italy, assignors to Nemco Apparatebau AG, Zug, Switzerland

Filed Jan. 22, 1973, Ser. No. 325,649
Claims priority, application Sweden, Jan. 28, 1972, 1309/72; June 19, 1972, 9162/72
Int. Cl. B65h 19/00
U.S. Cl. 312—38 13 Claims



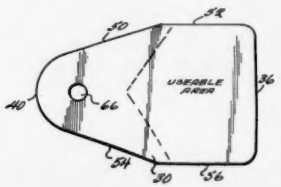
A dispenser for hand towelling in web form is disclosed, having a supply roll of fresh hand towelling, a dispensing roller over which towelling can be withdrawn from the supply roll, and a winding-up roller for drawing used towelling in and winding it up on a roll. The winding-up roller is driven by an electric motor which is switched on automatically after a predetermined time of use of the withdrawn hand towelling, so that in the rest condition of the dispenser the towelling is always tensioned over the cabinet, and also the end of the towelling, when the supply is used up, is automatically drawn into the cabinet and wound up. As fresh towelling is withdrawn manually from the supply roll, used towelling may at the same time be dispensed from the used towelling roll to a limited extent.

3,826,549

PIVOT FILE

Richard P. Scholfield, Peekskill, N.Y., assignor to Wheeldex Manufacturing Company Inc., Peekskill, N.Y.

Filed Jan. 9, 1973, Ser. No. 322,149
Int. Cl. A47f 63/00, 1/00; B65h 1/00
U.S. Cl. 312—59 25 Claims



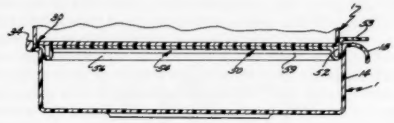
A card file and card wherein information bearing flat cards are pivotably mounted in a tray for movement between a storage and inspection position. In one embodiment, the cards are mounted on a guide rod while in another embodiment each card has a base portion with a circular edge extending more than 180° and the cards pivoted about the base portion while held by guide rods, suitable mating contours or the like.

3,826,550

STACKABLE DRAWER AND COVER

Robert L. Propst, Ann Arbor, and James O. Kelley, Spring Lake, both of Mich., assignors to Herman Miller Inc., Zeeland, Mich.

Division of Ser. No. 128,250, March 26, 1971. This application Mar. 13, 1973, Ser. No. 340,687
Int. Cl. A47b 77/00, 87/00
U.S. Cl. 312—107 8 Claims



A drawer includes a stacking recess around its top perimeter into which another similar drawer can be placed in order to stack the drawers one on top of the other. The drawer includes a cover which is thinner in cross section than the depth of the stacking recess in order that the cover can be positioned on the drawer without interfering the stacking of one drawer on top of another. The cover includes outwardly biased, resilient ribs which extend below the stacking recess when the cover is in place and which press against the drawer walls to insure a tight fit.

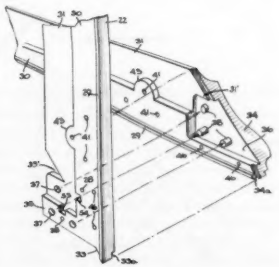
The drawer is supported in a structure having opposite sides with inwardly projecting guide flanges for embracing glide flanges projecting outwardly from the drawer. The stacking recess is formed in the drawer glide flanges and the cover rests on the glide flanges such that it is also embraced by the guide flanges of the support and cannot be removed from the drawer when the drawer is closed.

3,826,551

DOORS, DRAWER FRONTS AND LIKE STRUCTURES FOR CABINETS, CLOSETS AND FURNITURE

Michael S. Schwartz, Great Neck, N.Y., assignor to Ariel Creative Corporation, New York, N.Y.

Filed Nov. 7, 1972, Ser. No. 304,369
Int. Cl. A47f 3/00; A47b 17/04, 43/00
U.S. Cl. 312—140 21 Claims



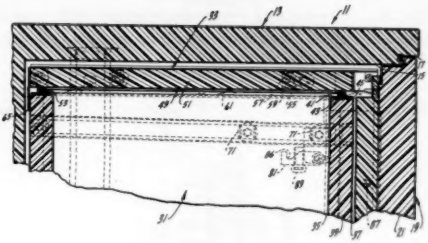
A modular construction for rectangular doors, drawer fronts and like components of cabinets, closets, articles of furniture and the like is disclosed. Any such component includes a peripheral frame composed of four interlocked, preferably mitred, end butted side members, and a center panel or insert overlying the central opening of the frame and removably retained in place at the rear of the frame. The side members of the frame are injection molded of styrene or other suitable synthetic plastic material to basically identical constructions, each member being provided at one end thereof with an integral male connecting portion and at its other end with a matching recessed or female connecting portion to enable the four side members of the frame to be snapped together firmly at perfect right angles to each other. After assembly, the side members of the frame may be permanently cemented or bonded to one another at their junctures, and detachable back members may be screwed or otherwise secured to the back of the frame to assist in retaining the insert in place. All the structural units, i.e., the side and back members and the inserts, can be produced in a wide range of sizes. The invention thus makes it possible for a dealer to stock a relatively small selection of side members, inserts and back members of various sizes while yet being able to form therefrom a far larger number of combinations. This abstract is not to be taken either as a complete exposition or as a limitation of the present invention, however, the full nature and extent of the invention being discernible only by reference to and from the entire disclosure.

3,826,552

INSULATED TAPE FILE

Clarence A. F. Anderson, Fruitport, Mich., assignor to The Shaw-Walker Company, Muskegan, Mich.

Filed Jan. 29, 1973, Ser. No. 327,749
Int. Cl. A47b 81/00
U.S. Cl. 312—214 9 Claims



A fire resistive filing cabinet having a file drawer which carries an insulated inner container for storing easily damageable data storage materials such as microfilm and magnetic tape. The inner insulated container protects the data storage materials from the deleterious effects of heat and moisture which may exist inside a fire resistive filing cabinet which is subjected to fire. The insulated inner container is equipped with a cover which must be closed before the file drawer can be shut. Proper closure of the cover can be positively ascertained before the file drawer is shut.

3,826,553

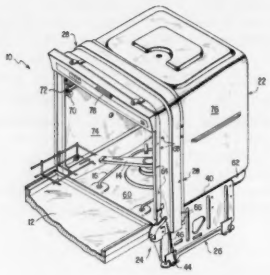
FRONT LOADING DISHWASHER EMPLOYING PLASTIC TUB CONSTRUCTION

Donald S. Cushing, and Thomas E. Jenkins, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Dec. 29, 1972, Ser. No. 319,203
Int. Cl. A47b 77/08
U.S. Cl. 312—253 8 Claims

A unipartite plastic tub is employed in a front loading dishwasher in substitution for the usual solid, lined or coated metal tubs. The disclosure relates, broadly, to those problems arising as a function of the substitution and, more specifically, to the

use of a supporting frame in combination therewith to rigidify the open front end of the tub, to provide a rigid anchor base



for dishwasher load component mountings and to constitute a firewall separating the plastic tub from the electrically operated equipment.

3,826,554

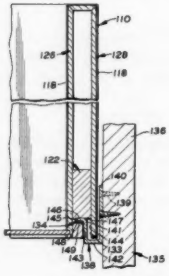
DRAWER CONSTRUCTION

Richard R. Cornell, Newcomerstown, Ohio, assignor to Groovfold, Inc., Newcomerstown, Ohio

Filed Sept. 9, 1971, Ser. No. 178,939

Int. Cl. A47b *88/00*

U.S. Cl. 312—330 **6 Claims**



A drawer in which the side rails and at least one end wall are constructed from a sheet of material. A pair of mitered, first grooves are precisely incised in the sheet so that the sheet may be folded along the grooves to form a beam. Mitered second grooves are precisely incised transversely of the beam so that it may be folded to form the side walls and at least one end wall of the drawer. By selectively locating the first grooves the spacing between the opposed walls of the side rails can be controlled to permit slide means to be concealed therein. The slide means coact with, and move along, support means as the drawer is opened and closed, and the support means may also be concealed within the side rails so that the drawer, or a plurality thereof, can present a finished appearance without the necessity of being housed within a cabinet. Suitable reinforcing means may also be secured to the sheet at selected locations before it is folded in order that desired areas of the finished drawer can be strengthened.

3,826,555

HOLOGRAPHIC CAMERA FOR FORMING PLANAR OR VOLUME HOLOGRAMS

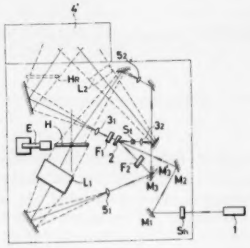
Kazuya Matsumoto, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 55,453, July 16, 1970, abandoned. This application Mar. 2, 1972, Ser. No. 231,431

Claims priority, application Japan, July 21, 1969, 44-57299

Int. Cl. G02b *27/00*

U.S. Cl. 350—3.5 **8 Claims**



A holography device which comprises a beam splitter arranged in the optical path of an incident beam from a beam source, said beam splitter splitting said incident beam into at least three beams, i.e., at least one transmitted beam and at least two reflected beams, said transmitted beam and at least one of said reflected beams being used as illuminating beam for the object and the other reflected beam being used as a reference beam, said object transferring its illuminating beam into a signal beam.

3,826,556

HOLOGRAPHIC MEMORY WITH FLEXIBLE LIGHT CONDUCTING FIBERS

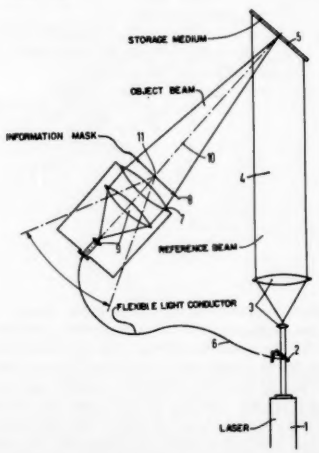
Peter Graf, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed June 6, 1972, Ser. No. 260,136

Claims priority, application Germany, June 21, 1971, 2130831

Int. Cl. G02b *27/00*

U.S. Cl. 350—3.5 **8 Claims**



A device for recording information as a sub-hologram or a single holographic frame of a matrix of holographic frames on

a holographic storage medium having an illuminating source having a beam-splitting device which provides a reference beam which is projected through a beam expansion system onto the holographic storage medium and an object beam which is expanded by an optical beam expansion system, which expanded beam is focused by an optical lens system through an information mask onto the storage medium to form the sub-hologram or single holographic frame characterized by the object beam being conducted from the beam-splitting device to the optical beam expansion system by at least one flexible light conducting fiber and by the end of the fiber, the optical beam expansion system and the optical lens system being mounted on a structural unit with their optical axes on a single optical axis and by the structural unit having pivotal movement around a center of rotation lying on the single optical axis. Preferably, the lenses of the optical beam expansion system are movable relative to the lens of the optical lens system to maintain the focal point in a given plane as the structural unit is pivoted on the center of rotation. If desired, the reference beam can be expanded by a beam expansion system and a light conducting fiber can be utilized for conducting the reference beam from the beam splitting device to the light expansion system, which may also be pivoted about a center of rotation.

3,826,557

ILLUMINATING AND IMAGING SYSTEM FOR OPTICAL PROBE

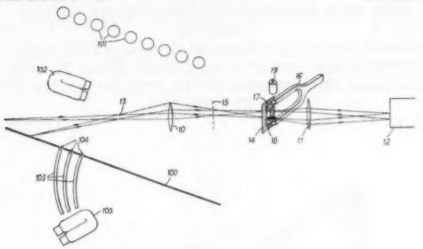
Daniel Richard Lobb, Farnborough, and Archer Michael Spooner, Henley-on-Thames, both of England, assignors to Redifon Limited, London, England

Filed Dec. 4, 1972, Ser. No. 311,505

Claims priority, application Great Britain, Jan. 20, 1972, 2834/72

Int. Cl. G02b *23/00*

U.S. Cl. 350—17 **11 Claims**



An optical imaging system, particularly for use with an optical probe moved over and viewing an illuminated terrain model for providing a visual display for flight simulation apparatus. General illumination is provided over the whole terrain model area together with strobed illumination of areas close to the probe. Cyclically and in phase with the strobed illumination, when it is on, the aperture of the optical system is reduced or the system is re-focused, to provide better focus of the near areas when the strobed illumination is on.

Additionally, model lights simulating terrain lights may be strobed similarly to provide better image definition thereof.

3,826,558

MECHANICAL ROTARY TILT STAGE

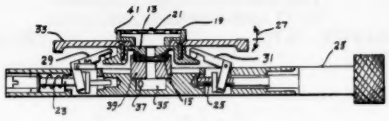
Phillip P. Rasberry, Durham, and Donald R. Whitaker, Raleigh, both of N.C., assignors to The United States of America as represented by the Secetary of the Air Force, Washington, D.C.

Filed July 21, 1972, Ser. No. 274,030

Int. Cl. G02b *21/26*

U.S. Cl. 350—90 **3 Claims**

A mechanical stage capable of tilting in any direction and rotated 360 degrees at any tilt angle includes a hemispherical support base which rests upon an O-ring bearing allowing tilt and rotary motion so that an object located at the center of the hemisphere at a point in space above the plane of the bearing



can be tilted and/or rotated without shifting its position in X or Y. A rotatable plate forming the top of the hemisphere has a vacuum chuck positioned thereon for holding the object during examination.

3,826,559

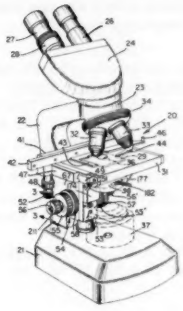
ADJUSTABLE TENSION CONTROL MEANS FOR MICROSCOPES

Emanuel R. Berliner, New York, and Harukichi Ishii, Tokyo, Japan, assignors to Bristoline Inc., Island Park, N.Y.

Filed Jan. 3, 1973, Ser. No. 320,707

Int. Cl. G02b *21/26*

U.S. Cl. 350—86 **4 Claims**



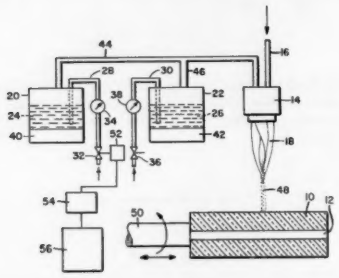
Coarse adjustment tension control means have been provided in a microscope in connection with the coarse adjustment control to permit the regulation of friction upon the coarse adjustment according to the users focusing preference and as well by the same control means permit frictional locking of the coarse control mechanism to the vertically-adjustable block on the vertically extending arm and the specimen platform so that it need not float or settle by gravity. This tension control adjusts for wear upon the coarse control and gears. A turn-knob is provided upon a gear housing extending through the main block that is actually adjustable upon a supporting bracket for the coarse adjusting pinion gear that meshes with a rack on the upstanding arm of the microscope and this knob engages with a plurality of short rods that slide through the bearing support plate by a turn knob and engage with a longitudinally shiftable ring having a plastic friction washer adapted more or less for engagement with a cooperating flange of the coarse adjustment gear case to thereby control the tension and permit the locking of the coarse adjustment control parts in their adjusted positions.

3,826,560

METHOD OF FORMING A LIGHT FOCUSING FIBER WAVEGUIDE

Peter C. Schultz, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Mar. 30, 1972, Ser. No. 239,496
Int. Cl. G02b 5/14; C03b 23/20, 25/00
U.S. Cl. 350—96 WG 20 Claims



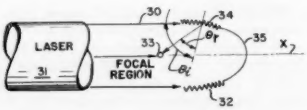
A method of forming an article such as a light focusing fiber waveguide by applying to a substantially cylindrical starting member a layer of soot having a radially varying composition by means of flame hydrolysis. The starting member is removed and the resulting substantially cylindrical hollow cylinder is heated and drawn to reduce the cross-sectional area and to collapse the hole to form a fiber having a solid cross-sectional area with a radially varying composition.

3,826,561

LASER PULSE TAILORING METHOD AND MEANS

David W. Gregg, Lafayette, Calif., assignor to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed May 3, 1973, Ser. No. 356,864
Int. Cl. G02b 27/40, 3/00
U.S. Cl. 350—204 2 Claims



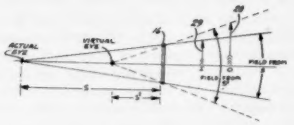
A method and means for time-tailoring the intensity of focussed laser radiation in the focal region by permitting stepwise shaping in space and time or by providing a continuous pulse shape which are basically accomplished by dividing up and reassembling portions of the laser beam. Stepwise shaping is accomplished by reflector assemblies which divide the pulse and redirect the portions thereof to allow arrival at a selected time and direction. Continuous pulse shaping is accomplished by the combination of a blazed diffraction grating reflector and a paraboloidal reflector, whereby a selected profile can be established to satisfy time intensity of the laser.

3,826,562

VIEW EXPANDING AND DIRECTING OPTICAL SYSTEM

John D. Baumgardner, and Dorothy J. Ebeling, both of Holland, Mich., assignors to Donnelly Mirrors, Inc., Holland, Mich.

Division of Ser. No. 252,611, May 12, 1972. This application May 29, 1973, Ser. No. 364,688
Int. Cl. G02b 5/04
U.S. Cl. 350—286 28 Claims



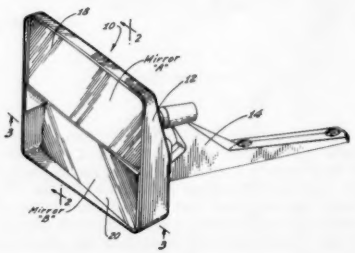
A view expanding and directing optical system for use in viewing around obstacles and the like comprising in combination a negative Fresnel lens and a Fresnel prism disposed in separate planes immediately adjacent one another. In the preferred embodiment, the system is mounted on a vehicle, at the rear thereof, whereby the system provides an expanded and demagnified viewing area to the rear of and below the level of the rear window and/or laterally of the vehicle. In other embodiments, the system may be coupled to means for extending or retracting it at desired times, and may be used in conjunction with vision aiding elements, such as mirrors and rearview mirrors.

3,826,563

SIDE VIEW MIRROR ATTACHMENT FOR MOTOR VEHICLE

Bernard E. Davis, 553 N. Harwood St., Orange, Calif. 92667

Continuation-in-part of Ser. No. 238,065, March 27, 1972, abandoned. This application Dec. 11, 1972, Ser. No. 314,176
Int. Cl. G02b 5/08
U.S. Cl. 350—303 2 Claims



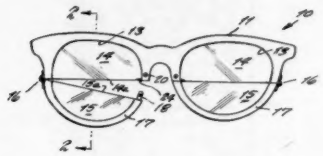
A mirror assembly is provided for attachment to a motor vehicle, and which is intended to be mounted on the vehicle as a "side view" mirror. The mirror assembly of the invention, in the embodiments to be described, comprises an upper flat mirror and a lower flat mirror, both of which are mounted in the same casing. The first and second mirrors are supported in essentially vertical planes, and they are inclined to one another so that when the assembly is attached to the motor vehicle, the two mirrors provide separate reflected fields, for increased coverage by the assembly, as compared with the usual prior art side view mirror. The casing of the assembly may be pivotally mounted on the motor vehicle, in the same manner as the usual side view mirror, for adjustment to a desired position.

3,826,564

EYE GLASS FRAME FOR REPLACEABLE LENSES

Francis D. Werling, Sr., c/o George Spector 3615 Building 233 Broadway, New York, N.Y.

Continuation-in-part of Ser. No. 85,915, Nov. 2, 1970, abandoned. This application Sept. 25, 1972, Ser. No. 292,269
Int. Cl. G02c 7/10, 1/08
U.S. Cl. 351—45 2 Claims



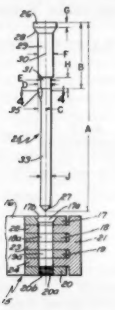
An improved pair of eye glasses in which each lens rim opening of the eye glass frame has a removable upper and lower lens for interchange with other clear or tinted lenses, the present invention including a latch that automatically locks the upper lens from dropping out accidently when the lens frame is opened during lens interchanging operation.

3,826,565

SPECTACLE FRONT HINGE PINNING SYSTEM

Ronald Arthur Wenzel, Norfolk, Mass., assignor to The Hillsinger Corporation, Plainville, Mass.

Filed Apr. 26, 1973, Ser. No. 354,772
Int. Cl. G02c 5/22; E05d 5/12
U.S. Cl. 351—121 5 Claims



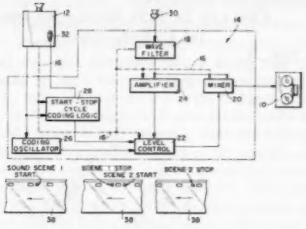
A spectacle front hinge pinning system having a front hinge connecting the temples of the spectacle to its frame. The front hinge has a plurality of mating barrels, each having its own bore with these bores being aligned. The spectacle hinge pin is inserted downwardly through the aligned bores in the barrels to maintain the barrels in aligned arrangement. The hinge pin has an elongated body made of a plastic material with a head formed on one of its ends. It has a shank portion extending from the head. A relieved section is formed adjacent the shank portion and it has a diameter less than that of the shank portion. A lead portion is located adjacent said relieved section and it has a barb formed thereon that extends transversely with respect to the axis of the lead portion outwardly beyond the outer surface of said relieved section to extend radially beneath the end lower barrel of the hinge.

3,826,566

APPARATUS FOR THE SYNCHRONIZATION OF SEPARATE PICTURE AND SOUND RECORDS

Michael W. Csontos, North Chili, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 23, 1970, Ser. No. 31,182
Int. Cl. G03b 31/04
U.S. Cl. 352—12 9 Claims



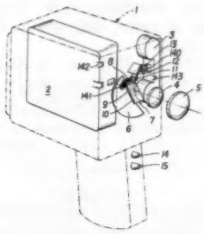
Apparatus usable with an ordinary magnetic tape recorder for preparing sound motion pictures includes a camera adapted to code mark film and to produce a sync pulse signal for magnetically marking the sound record. An accessory box couples the camera and recorder for activating the camera film coding mechanism in response to receipt from the camera of the first and last sync pulse signal of a sound scene and for converting the sync pulse signal into frame rate and scene identification signals, which, after being mixed with the scene sound signal, are applied to a sound track of the tape recorder.

3,826,567

CAMERA

Karl Vockenhuber; Otto Freudenschuss, and Peter Revy Von Belvard, all of Vienna, Austria, assignors to Karl Vockenhuber and Raimund Hanser, Vienna, Austria

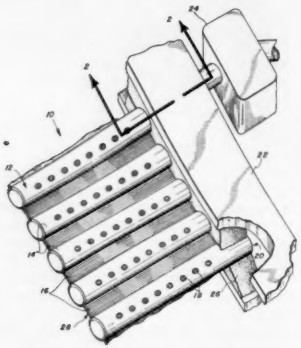
Filed June 1, 1973, Ser. No. 366,217
Claims priority, application Austria, June 6, 1972, 4838/72; June 6, 1972, 4837/72; July 4, 1972, 5721/72; July 12, 1972, 5966/72
Int. Cl. G03b 19/18
U.S. Cl. 352—137 26 Claims



A camera is able to receive simultaneously a still photographic film and a cinematographic film. It has an optical system which is, at least in part, common to both types of film. Release mechanisms for respective still and cine shutters are connected to one another and to a mirror which is displaceable between positions in which it directs light to the still and cine films respectively, so that release of the still shutter is inhibited while the mirror is in its cine position and vice versa. The shutter release mechanisms may be operated by respective controls or a two-position common control. The optical system may be adjustable to suit the different frame sizes of

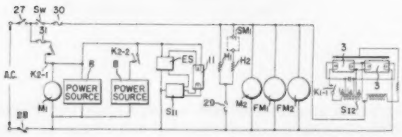
the still and cine films, and may include arrangements for compensating for the different film sensitivities. The films may be in respective cassettes bearing sensitivity codes sensed automatically by the camera.

3,826,568
SHEET TRANSPORT SYSTEM
Frederick W. Hudson, West Henrietta, N.Y., assignor to Xerox Corporation, Stamford, Conn.
Filed Aug. 24, 1973, Ser. No. 391,196
Int. Cl. B65g *15/00*
U.S. Cl. 355—3 **15 Claims**



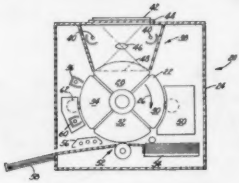
An endless vacuum belt system for transporting sheets, particularly suited for transporting copy sheets in electrostatographic transfer systems, where the belt is made up of a multiplicity of flexibly connected small diameter hollow tubular, rigid vacuum chambers, each adapted to have a vacuum applied through its end, and where the tubular vacuum chambers extend transverse the belt and have sheet-retaining vacuum openings.

3,826,569
EXPOSURE SAFEGUARDING DEVICE FOR PHOTOCOPYING MACHINE
Hisashi Sakamaki, Yokohama, and Yoshimasa Kimura, Kawasaki, both of Japan, assignors to Conon Kabushiki Kaisha, Tokyo, Japan
Filed Feb. 27, 1973, Ser. No. 336,377
Claims priority, application Japan, Mar. 3, 1972, 47-22140
Int. Cl. G03g *15/00*
U.S. Cl. 355—14 **8 Claims**



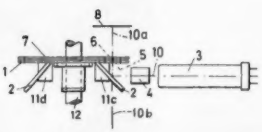
This invention provides a safety device for preventing the under exposure in a photocopying device. The device includes a sensitive element for detecting the temperature around the exposure light source, and delay means for varying the delay time according to the temperature difference detected by the sensitive element.

3,826,570
PHOTOCONDUCTOR-CARRYING DRUM ASSEMBLY
James Andrew Kolibas, Broadview Heights, Ohio, assignor to Addressograph-Multigraph Corporation, Cleveland, Ohio
Filed Dec. 3, 1973, Ser. No. 421,258
Int. Cl. G03g *15/00*
U.S. Cl. 355—3 R **32 Claims**



A photoconductor-carrying drum assembly is provided comprising a plurality of frame structures each with a pair of pivotal support members which normally mate together to define a curved surface with a flexible photoconductor element resting thereon. The support members of each frame structure swing inwardly when the structure reaches a predetermined angular position upon rotation of the drum assembly, whereby the photoconductor element assumes a substantially planar configuration for exposure. Each photoconductor element extends between supply and take-up spools carried by the frame structure together with a mechanism for periodically advancing the photoconductor in the imaging area.

3,826,571
LENS MECHANISM
Harry Arthur Hele Spence-Bate, 85 Seabourne Rd., Southbourne, Bournemouth, England
Filed Apr. 6, 1973, Ser. No. 348,622
Claims priority, application Great Britain, Apr. 8, 1972, 16341/72
Int. Cl. G03b *27/70*
U.S. Cl. 355—46 **8 Claims**

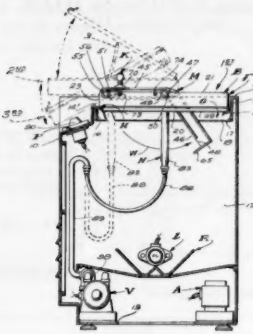


A camera for selectively filming at least two separate types of input images through a first and second object lenses respectively. A mask is positioned between the film and a rotatable lense carrier upon which is mounted the first object lense and mirror which directs the image of the second object lense to the film. The camera may be a microfiche camera for recording a document through the first object lense and for recording the image from a cathode ray tube through the second object lense.

3,826,572
PHOTOGRAPHIC PLATE PRINTER
Dennis C. Duerr, 22426 Abordo, Saugus, Calif. 91350
Filed Jan. 18, 1973, Ser. No. 324,824
Int. Cl. G03b *27/04*
U.S. Cl. 355—93 **11 Claims**

A photographic plate printer comprising a box-like cabinet with a front side and an opening in the top, a light source in the cabinet below and disposed toward said openings, a flat carrier with a plate supporting surface and mounting means

pivotally and shiftably mounting the carrier to the cabinet whereby the carrier is shiftable from a working position where it occurs above and forwardly offset from the top of the



cabinet with its support surface disposed upwardly to an exposing position where it occurs within the opening in the cabinet with its support surface disposed downwardly.

3,826,573

METHOD OF RECORDING AND REPRODUCING INFORMATION IN THE FORM OF ELECTRICAL CONDUCTIVITY DIFFERENCES

Paul Heinzer, Geneva, Switzerland, assignor to Battelle Memorial Institute, Geneva, Switzerland

Filed June 16, 1971, Ser. No. 153,807

Claims priority, application Switzerland, June 17, 1970, 9151/70

Int. Cl. G03b ; B41m *5/18*

U.S. Cl. 355—133 **22 Claims**

Information recording material sensitive to the action of activating radiation, at least part of the thickness of which from the surface thereof, consists of a homogeneous dispersion of electrically conductive particles in an insulating binder essentially consisting of a substance or composition having swelling and/or solubility properties that can be modified through exposure to activating radiations. This material is able to yield a recording of information in the form of electrical conductivity differences after firstly being exposed to said radiations, modulated according to the information to be recorded, and secondly being treated to cause the exposed parts and the unexposed parts to swell differently. This material can be used, for instance, for reproducing documents, for taking X-ray pictures and for taking pictures in electronic microscopy.

3,826,574

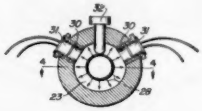
NEPHELOMETER

Fon R. Brown, Jr., Hyrum, Utah, assignor to Continental Distributors, Inc., Los Vegas, Nev.

Filed Feb. 12, 1973, Ser. No. 332,014

Int. Cl. G01n *21/00*

U.S. Cl. 356—103 **12 Claims**



A nephelometer or the like is constructed with a light-integrating chamber opening into a sample-receiving test chamber, so light from a beam of light directed longitudinally through a test tube holding a sample of liquid to be tested, which light is transversely scattered by particles of matter within the liquid, will be received by such light-integrating chamber. Means for reflecting and diffusing the received light is provided within the light-integrating chamber, so the received light will, in effect, be conserved and stored for transmittal of a maximum amount thereof to light-detecting means. As preferably constructed, the light-integrating chamber is annular and concentrically surrounds and opens into the test chamber, the light reflecting and diffusing means being a circumferential, unpolished but reflective, machined wall surface backing the annular chamber and confronting the test chamber, and the light detecting means being one or more sensors exposed to light from the light-integrating chamber through one or more ports provided in the diffusely reflective wall surface. In this way, signals of normal intensity are obtained by a light beam of less intensity than normal, thereby reducing heat and resulting turbulence of the sample, and the light received by the detectors is more representative of conditions in the sample than is normally the case. Electronic circuitry is employed that gives linear current output proportional to the amount of light detected. Thus, direct read-out of light measurements are possible.

3,826,575

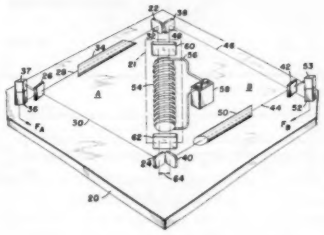
HIGH PERFORMANCE RING LASER GYROSCOPE WITH MAGNETO-OPTICAL BIAS

John F. Walter, Jr., Columbia, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed June 25, 1973, Ser. No. 373,212

Int. Cl. G01b *9/02*

U.S. Cl. 356—106 LR **9 Claims**



A ring laser gyroscope capable of producing an output signal at low rates of angular rotation. A differential magneto-optical bias system eliminates the requirement of extreme stability in the bias system.

3,826,576

LASER MEASURING OR MONITORING SYSTEM

Eugene E. Stewart, Canton, Ohio, assignor to Goodyear Aerospace Corporation, Akron, Ohio

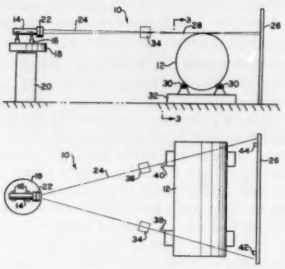
Filed Dec. 20, 1972, Ser. No. 316,793

Int. Cl. G01b *9/08*

U.S. Cl. 356—164 **11 Claims**

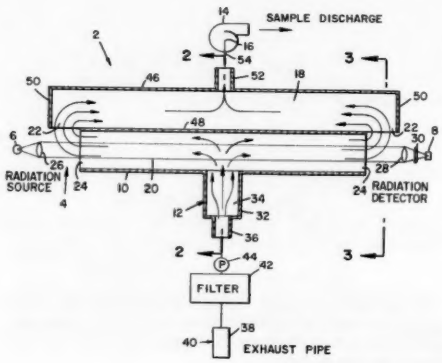
A system in which a reference plane is established by passing a laser light beam through a lens assembly to create a focusable diverging planar beam of light. In one illustrated embodiment of the invention, the reference beam is projected tangent to a cylindrical surface of an object with the beam being focused at a point closely adjacent but forward of the surface and projected onto a screen rearwardly of the object. The position of the beam is precisely controlled and any devia-

tion in the diameter of the object is indicated as an interruption of the beam on the screen. Systems for directing the light



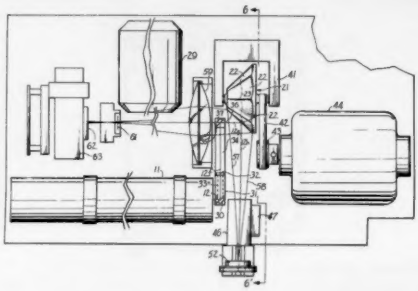
into a beam of substantially uniform rectangular cross section are also enclosed.

3,826,577
GAS ANALYZING APPARATUS
Charles P. Irwin, Cupertino, Calif., assignor to Commercial Electronics, Inc., Mountain View, Calif.
Filed Dec. 7, 1972, Ser. No. 313,006
Int. Cl. G01n *21/26*
U.S. Cl. 356—201 **19 Claims**



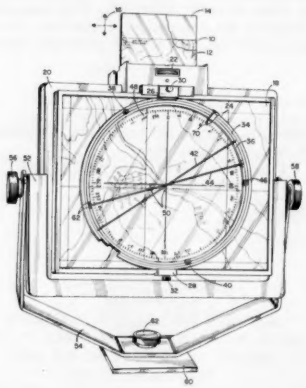
Gas analyzing apparatus in which one or more components in a gas are detected by measuring the rate at which the gas absorbs radiation such as light. The analyzer is defined by an open ended tube disposed concentrically about the optical path of the radiation and a vacuum chamber disposed over the length of the tube and having ends adjacent the tube ends. The vacuum chamber is outside the optical path to prevent its interference therewith. Gas is introduced into the tube, preferably at the middle thereof, thereafter flowed parallel to the optical path to the open tube ends and is then completely withdrawn from the optical tube ends by the vacuum prevailing in the vacuum chamber so that the gas is unable to contact and contaminate either the radiation source or the radiation detector.

3,826,578
SCANNING INSPECTION SYSTEM AND METHOD
Gordon J. King, and George Gugliotta, both of Ridgefield, Conn., assignors to Laser Sciences, Inc., Bethel, Conn.
Filed Dec. 8, 1972, Ser. No. 313,328
Int. Cl. G01n *21/32*
U.S. Cl. 356—237 **4 Claims**



A small cross-sectional beam of radiant energy from a source such as a laser is directed by way of an optical scanning device onto a surface to be inspected. The intensity of the radiant energy reflected from the surface of the object is measured to determine the quality of the surface. The intensity may be equalized by focusing the reflected energy and providing aperture means so located that energy from mid-scan areas passes through the equalizing means relatively unimpeded to be measured while energy from points closer to the mid-scan point is intercepted to a greater degree. If the surface to be inspected is moving in a direction having a component perpendicular to the direction in which the beam is deflected by the scanning device, the scanning device need only deflect the beam in one plane. If the object is stationary, the scanning device may include two deflecting means in tandem, one deflecting the radiant energy beam in one direction and the other deflecting it in a perpendicular direction.

3,826,579
MICROFILM NAVIGATION SYSTEM
Herbert L. Schurgin, 26 Juniper St., Wenham, Mass. 01984
Filed Mar. 5, 1973, Ser. No. 338,331
Int. Cl. G03b *21/11*
U.S. Cl. 356—247 **7 Claims**



A compact portable microfiche chart display system especially adapted for use in marine navigation and piloting. A

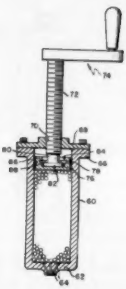
projection screen on which a chart is displayed has provided thereon a compass rose and one or more rotatable course indicators to enable plotting to be made directly in association with the displayed chart. The system can be oriented with the projected chart in a horizontal plane such that the course indicator can be employed to take pelorus sightings in direct relation to charted position.

3,826,580

ADHESIVE DISPENSER

William H. Bohli, Catonsville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sept. 13, 1971, Ser. No. 180,086
Int. Cl. B43k *5/14*
U.S. Cl. 401—132 **4 Claims**



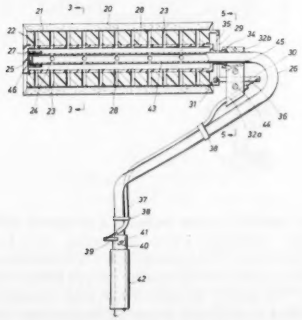
A dispenser for applying an adhesive mixture, the constituents of which are contained within the dispenser in the form of small capsules, including a hollow cylindrical housing having a piston member slidably positioned therein and sealingly closing one end thereof. The other end of the housing includes a closure portion having a plurality of bores formed therein, the bores having a diameter of a size smaller than the capsules. Means for moving the piston member are provided which enable the piston member to crush the capsules, mix the adhesive constituent and force the mixture through the bores provided in the closure portion.

3,826,581

FOUNTAIN LIQUID APPLICATOR

Bee Henderson, P.O. Box 353, Del Rio, Tex. 78840

Filed Aug. 10, 1972, Ser. No. 279,609
Int. Cl. B44d *1/00*; **A46b** *11/00*
U.S. Cl. 401—197 **1 Claim**



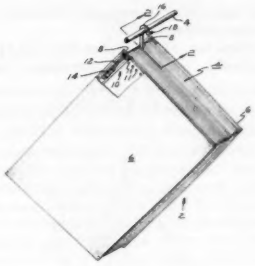
There is disclosed a pressured liquid applicator which feeds the liquid to the applying surface in an even flow and at the control of the operator. In each embodiment there is a plurality of delivery tubes, and each tube has a positive open-close operation so that substantially the same force is applied to the liquid passing through each delivery tube, thus achieving the even distribution of the liquid. The actuation of the open-close operation is at the operator's hand, requiring a minimal disruption in the application of the liquid while the applicator surface is being resupplied. In several embodiments of the applicator, the pressure of the liquid being supplied is used to automatically return and maintain the applicator in the closed position unless the operator applies a positive action to open the applicator for resupply of the liquid.

3,826,582

LOOSE LEAF BINDER FILE HANGER DEVICES

Edward Podosek, Wilbraham, Mass., assignor to National Blank Book Company, Inc., Holyoke, Mass.

Filed Aug. 2, 1972, Ser. No. 277,483
Int. Cl. B42f *3/00*, *15/00*
U.S. Cl. 402—4 **1 Claim**



A file suspension hook device for bound loose-leaf file assemblies having "Acco" fastener type compression strips with flexible post elements securing the sheets together at corner edges thereof, said hook device having an outer looped end for engaging a file suspension bar and an inner end for releasable mounting on the corner post element between sheets for rotation on the post to and from a nested substantially concealed position at the adjacent marginal edge portion of the sheet pack and a position of extension from said bound corner. A single hook may be used to hang a binder at its corner for free swinging movement from a hanger rod or bar, or hooks may be clipped at each end of the binding for hanging between horizontally spaced suspension file rods.

3,826,583

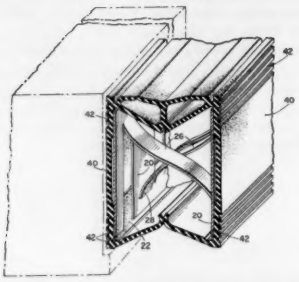
LEAF SPRING PAVEMENT JOINT SEAL

Robert Lee Pare, 27 Chiswick Rd., Edgewood, R.I. 02903

Filed Nov. 9, 1972, Ser. No. 304,906
Int. Cl. E01c *11/08*
U.S. Cl. 404—67 **23 Claims**

An expansion joint for roadbed slabs. Two parallel and elongated plates are each provided with resilient struck-out tongues. The tongues of one plate engage opposite portions of the other plate, and vice versa. In an embodiment, the tongues

press against one another. Another embodiment has a central plate from which the tongues are struck out or to which the



tongues are attached. An elastomer sheath partially or completely surrounds the springs and plates to make sealing contact with edges of adjacent modular slabs.

3,826,584

PROCESS AND APPARATUS FOR THE PRODUCTION OF CONNECTORS FOR SPACE FRAMEWORKS OR THE LIKE

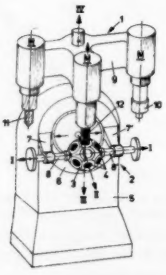
Max Mengeringhausen, Wurzburg, Germany, assignor to Mero AG, Zug, Switzerland

Filed Jan. 31, 1972, Ser. No. 222,111

Claims priority, application Germany, Feb. 8, 1971, 2105824

Int. Cl. B23b *39/20*

U.S. Cl. 408—35 **2 Claims**



In producing spherical and polyhedral connectors for space frameworks from blanks a tapped through hole is first formed through the center of the blank. The blank is then engaged by its through hole in a clamping device that is rotatable along the axis of the through hole, the clamping device being mounted on an element that is rotatable on an axis at right angles to the axis of the through hole and which intersects the axis of the through hole at right angles. Tool means positioned adjacent the clamp to work on the blank engaged thereby operate along an axis disposed perpendicular to the first two mentioned axes, the tool means being operative to machine the blank at fixed spatial positions to which the blank is adjusted by movement about the first two axes, the tool means boring holes in the blank, machining flats around said holes at right angles to the holes and tapping the holes. Between these machining operations the tool means are moved relative to the clamping device and the connector blank about a further axis common to the tool means and the clamping device. The connector blank is then positioned to a new predetermined spatial position by the clamping device and the tool means produce another hole while the blank is maintained in the original clamping device by its through hole whereby a plurality of accurate spaced holes are produced in the connector blank.

3,826,585

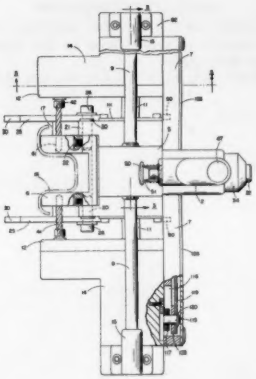
DUAL HEAD DRILL DEVICE

Ray E. Horton, Hawthorne; Ernest S. Harris, Inglewood, and Granville P. Leffel, South San Gabriel, all of Calif., assignors to Northrop Corporation, Los Angeles, Calif.

Filed Aug. 13, 1973, Ser. No. 387,897

Int. Cl. B23b *45/04*

U.S. Cl. 408—41 **8 Claims**



A hand-held air operated dual head drilling device adapted to automatically and simultaneously drill holes in a part from opposite sides thereof. An air operated mechanism is contained in the center section including a master cylinder, two opposed slave pistons in the cylinder and fixed to the drill motor heads, and dual triggers for operating the drill motors and slave pistons respectively.

3,826,586

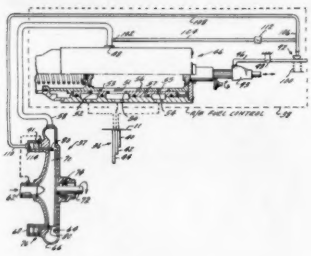
VARIABLE DIFFUSER CENTRIFUGAL PUMP SHUTTER CONTROL

John C. Richards, Mason, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Dec. 29, 1972, Ser. No. 319,219

Int. Cl. F02c *9/04*; **F01b** *25/00*; **F02c** *9/08*

U.S. Cl. 415—42 **14 Claims**



A fluid delivery system includes a shuttered diffuser, constant speed, centrifugal pump, a metering valve for distributing fluid delivered by the pump, and a control system for positioning the shutter in response to the operation of the metering valve. The shutter includes a dual area annular piston, one face of which is subjected to the outlet pressure of the pump, while the other face of which is subjected to a signal pressure which is controlled by means of a signal valve associated with the metering valve. The signal valve operates to open the

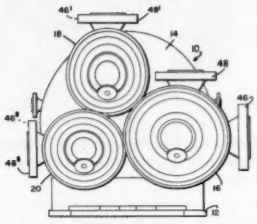
shutter at high flow rates and close the shutter at low flow rates, thereby reducing fluid temprature rise otherwise associated with a constant speed, centrifugal pump.

3,826,587

CENTRIFUGAL GAS COMPRESSOR UNIT

Hanns Hornschuch, Easton, Pa., assignor to Ingersoll-Rand Company, Woodcliff, N.J.

Filed Apr. 10, 1973, Ser. No. 349,656
Int. Cl. F01d *15/08, 13/00, 5/00*
U.S. Cl. 415—60 **10 Claims**



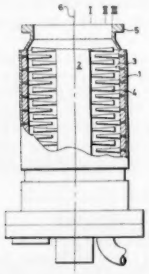
A multi-housing compressor having a plurality of gas compressing stages in each of parallel housings, the housings being integral with and extending perpendicularly from a gear housing. Rotor assemblies and associated diffusors are slidably replaceable from the respective housings, obviating any requirement to dismantle the gear housings. While the housings each receive gas, sequentially, for further compression, impellers and shafts in a plurality of the compressor housings are of identical weight, with the impellers thereof of identical axial length albeit of differing diameters.

3,826,588

TURBOMOLECULAR VACUUM PUMP

Rudiger Frank, Cologne, Germany, assignor to Leybold-Heraeus-Verwaltung GmbH, Koln-Bayental, Germany

Filed June 19, 1973, Ser. No. 371,372
Claims priority, application Germany, June 19, 1972, 2229724
Int. Cl. F01d *1/36;* **F03b** *5/00;* **F01d** *1/02*
U.S. Cl. 415—90 **4 Claims**



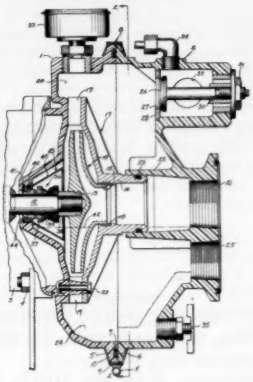
In a turbomolecular vacuum pump which has axially spaced pump stages each formed of a stator blade wheel and a cooperating rotor blade wheel, the pitch angle of the blades in at least one pump stage increases in a direction radially outwardly from the blade ends attached to the pump rotor or pump stator for maintaining the compression ratio in that pump stage at least approximately constant in the radial direction.

3,826,589

PLASTIC PUMP CONSTRUCTION

Raymond W. Frank, and William M. Kovelovec, both of Delavan, Wis., assignors to Sta-Rite Industries, Inc., Delavan, Wis.

Filed June 22, 1972, Ser. No. 265,347
Int. Cl. F04d *29/10, 29/40*
U.S. Cl. 415—170 A **9 Claims**



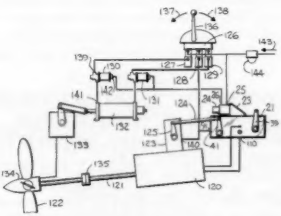
A pump construction having a housing composed of a pair of plastic housing sections. The abutting ends of the housing sections are provided with mating flanges which are joined together by a clamping ring to provide a continuous peripheral connection for the housing sections. To compensate for deflection in the plastic housing sections under operating pressure, a sliding axial connection is provided between the inlet of the diffuser of the pump and one of the housing sections. Heat is dissipated from the area of the drive shaft seal by means of a metallic shield having a base secured to one of the plastic housing sections, and the body of the shield extends outwardly within the pumping chamber in spaced relation to the seal and to the housing section.

3,826,590

ENGINE LOAD CONTROL

Jack R. Kobelt, 6110 Oak St., Vancouver 13, British Columbia, Canada

Filed Aug. 28, 1972, Ser. No. 283,904
Int. Cl. B63h *3/10;* **B64c** *11/34*
U.S. Cl. 416—27 **11 Claims**



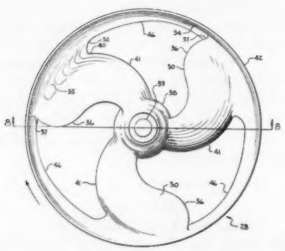
This disclosure pertains to an engine load control which combines mechanical and fluid control devices whereby continuously to monitor and modify an engine load in conformance with an engine speed governor setting and fuel demand. A valve actuating bridge is suspended in a frame by cam following means riding on separate speed and fuel cams.

At least one of the cams comprises adjustable segments whereby the response of the bridge may be matched with an engine speed-fuel relationship. The bridge actuates a two-stage spool-valve which permits sequentially a large flow of fluid followed by a relatively small flow of fluid into a linear actuator; this two-stage valving permits rapid response to sudden load changes followed by a slow stabilization or return to equilibrium without hunting. The linear actuator operates a pressure varying control valve in a pneumatic control circuit. The speed cam is actuated by a pneumatic positioning linear actuator and the fuel cam is actuated by the fuel rack of an engine speed control governor. An illustrated application of my invention is variation of blade pitch in a reversible controllable pitch propeller. Blade pitch is changed by a hydraulic servo-mechanism; the servo-mechanism is controlled by a pneumatic circuit having a single lever control, a pair of pressure regulating relay valves, and a double-acting self-centering positioning linear actuator. Blade pitch is operatively determined by the lesser of the pressures established by the single lever control and the pressure varying control valves actuated by the engine load control.

3,826,591
CENTRIFUGAL MARINE PROPELLER

Ernest V. Wilson, Green Acres Trailer Ct., 1501 N. 6th St., Box 6, Grants Pass, Oreg. 97526

Continuation-in-part of Ser. No. 117,830, June 2, 1971. This application Dec. 22, 1971, Ser. No. 210,959
Int. Cl. B63h *1/16*
U.S. Cl. 416—177 **1 Claim**



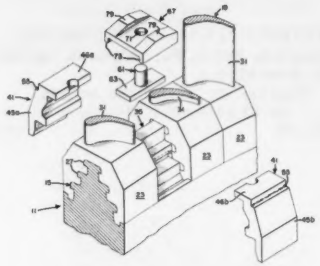
Marine propellers having helical blades are enshrouded in and integral with tapered shells which convert radially moving water to axially moving water, and also minimize turbulence.

3,826,592
SPLIT LOCKING PIECE FOR CIRCUMFERENTIAL DOVETAIL ON TURBINE WHEEL

Robert G. Raboin, Fitchburg, Mass., assignor to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 117,830, June 2, 1971. This application Dec. 22, 1971, Ser. No. 210,959
Int. Cl. F01d *5/32*
U.S. Cl. 416—222 **3 Claims**

A turbine wheel includes a circumferential dovetail for retaining a plurality of circumferentially mounted turbine buckets. The circumferential dovetail includes a reduced dovetail portion or bucket admission slot for admitting the buckets onto the turbine wheel. A split locking piece is positioned in the bucket admission slot for closing the same after all the buckets have been mounted onto the turbine wheel. The split locking piece includes a pair of oppositely disposed legs which straddle the turbine wheel at the bucket admission slot and include radially outward flanges which join to form a

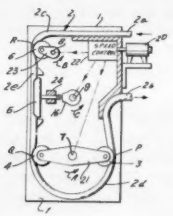


platform. A cap straddles the platform holding the two legs together while a radially outwardly extending pin secures the cap to the platform.

3,826,593
PULSEFREE PERISTALTIC PUMP AND METHOD OF OPERATING SAME

Wolf Von Casimir, Almeidaweg 33, D813 Starnberg, Germany

Filed May 11, 1973, Ser. No. 359,528
Claims priority, application Germany, May 12, 1972, 2223354
Int. Cl. F04b *43/08, 43/12, 45/06*
U.S. Cl. 417—53 **10 Claims**



In a peristaltic pump in which at least two impeller rollers move codirectionally along spaced-apart portions of a flexible tube with intermittent blocking of the flow at both portions simultaneously, the part of the tube upstream of the flow-blocking leading roller is placed under a pressure equaling that prevailing downstream of that roller just before the latter is lifted off the tube wall to give passage to a limited volume of the conveyed fluid. The equalizing pressure may be exerted by a plunger or another codirectionally moving roller, or by intermittently driving a third roller upstream of the trailing roller at an increased speed with reference to the flow-blocking leading roller just before the intervention of the trailing roller.

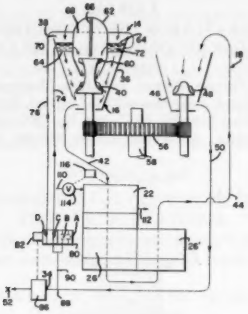
3,826,594
GAS COMPRESSOR

Hanns Hornschuch, and Leroy M. Krouse, both of Easton, Pa., assignors to Ingersoll-Rand Company, New York, N.Y.

Continuation of Ser. No. 159,130, July 2, 1971, abandoned. This application Oct. 17, 1973, Ser. No. 407,252
Int. Cl. F04b *3/00;* **F01d** *13/00*
U.S. Cl. 417—245 **24 Claims**

The machine has a primary gas inlet for the first of two motor-powered compressing stages with two, separate, secondary gas inlets confined within walls of the primary inlet housing. The first compressing stage has a compressor wheel with a turbine wheel integral therewith, the turbine wheel having

compressed gas addressed thereto, selectively, either not at all, or by either one or both of the secondary inlets from a compressed gas discharge line for energy recovery to help drive the compressor wheel while also controlling surge and



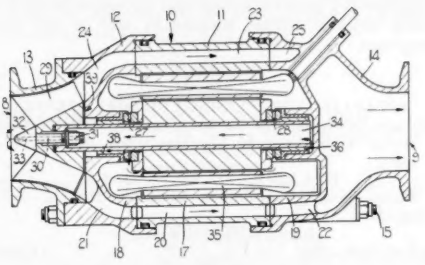
maintaining compressor operation at an optimum design level. The machine further includes means for preventing an icing-up of the first compressing stage even under below-freezing environmental conditions.

3,826,595

ELECTRICALLY DRIVEN PUMP

Harry Simister Bottoms, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed Mar. 7, 1973, Ser. No. 338,959
Int. Cl. F04b *17/00*
U.S. Cl. 417—370 **4 Claims**



An electrically driven pump has a housing which contains the stator and rotor of an electric induction motor. A portion of the liquid urged through the pump by an impeller driven by the rotor is passed through the bearings of the pump and across the stator windings before returning to the pump inlet.

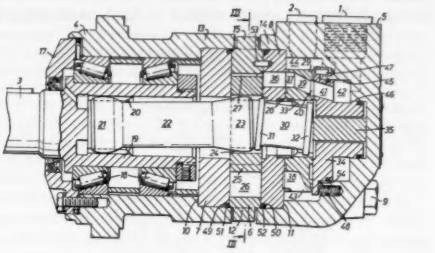
3,826,596

ROTARY PISTON MACHINE WITH SPLINED INTERNAL SHAFT

Gunnar Lyshoj Hansen, Nordborg, and Rolf Christensen, Sonderborg, both of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Mar. 21, 1973, Ser. No. 343,444
Claims priority, application Germany, Apr. 26, 1972, 2220391
Int. Cl. F04c *17/06*
U.S. Cl. 418—61 B **5 Claims**

The invention relates to a rotary piston type machine of the type which utilizes a gerotor mechanism for the expansible chambers. In the prior art the ring member of the gerotor normally or often has seven internally extending teeth and holes are normally provided in the seven teeth to accommodate seven screw bolts used for clamping together the casing parts. In the machine hereof the gerotor ring member is clamped between two side disks which in turn are disposed in counter-



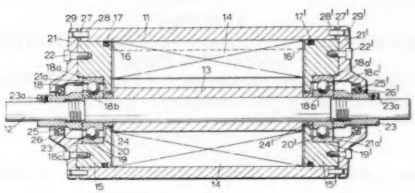
bores of concentric casing collar portions which collar portions are in axially spaced relation to each other when in their clamped positions. Only four screw bolts are utilized for clamping together the casing parts and these bolts are positioned radially externally of the gerotor ring member and the two side disks thereof.

3,826,597

COMPRESSOR WITH CARTRIDGE ASSEMBLY

Lothar Peter Schmitz, Pudsey, near Leeds, England, assignor to The Drum Engineering Co. Limited, Dudley Hill, Bradford, England

Filed Oct. 19, 1972, Ser. No. 299,064
Int. Cl. F01c *19/08*; **F04c** *15/00, 27/00*
U.S. Cl. 418—131 **8 Claims**



The invention relates to a vane type compressor comprising a tubular body having inlet and outlet ports, end plates closing the ends of said tubular body, a rotor supported for rotation in said tubular body and sliding vanes supported by said rotor, one of said end plates being axially retained with said rotor and axially displaceable relative to said tubular body.

3,826,598

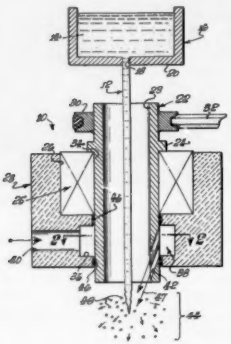
ROTATING GAS JET APPARATUS FOR ATOMIZATION OF METAL STREAM

Albert R. Kaufmann, Lexington, Mass., assignor to Nuclear Metals, Inc., Concord, Mass.

Division of Ser. No. 202,351, Nov. 26, 1971, Pat. No. 3,725,517. This application Jan. 15, 1973, Ser. No. 323,347
Int. Cl. B22d *23/08*
U.S. Cl. 425—7 **5 Claims**

This method comprises striking a stream of liquid metal with a jet of gas which is rotated about the liquid metal stream so that it strikes the latter at an angle of between about **5°** and about **90°** with respect to the flow axis of the liquid stream to break up the liquid metal into small drops which solidify as a powder. The width of the gas jet is preferably less than that of

the liquid metal stream. The rotational velocity of the gas jet about the liquid metal stream is sufficient to circle the liquid stream at least once before the latter moves out of the gas impingement zone. The apparatus employed comprises a vertically-aligned tube which is rotatably mounted in a stationary housing which, together, define an annular plenum chamber located concentrically about the tube. The wall of the rotatable tube defines an aperture which is angled between about 5°



and about 90° with respect to the axis of the tube so that a stream of gas flowing therethrough is centered on the vertical axis of the rotatable tube along which liquid metal is gravity flowed from a pour cup positioned above the rotatable tube. As the latter is rotated, a gas is flowed into the plenum chamber and through the angled tube aperture to strike the liquid metal stream flowing downwardly through the tube. The resulting fine metal particles are collected after solidification in a chamber placed below the rotatable tube.

3,826,599

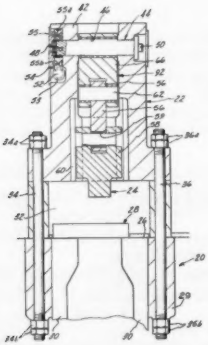
ADJUSTING MECHANISM AND PROCESS FOR POWDER COMPACTING PRESS

Raymond P. DeSantis, Royal Oak, and George D. DeTroyer, Grosse Ile, both of Mich., assignors to Wolverine-Pentronix, Inc., Lincoln Park, Mich.

Filed June 1, 1972, Ser. No. 258,720

Int. Cl. B30b *11/02, 11/14, 11/22*

U.S. Cl. 425—78 **9 Claims**



A press having both upper and lower punch operations with controlled action stroke for both upper and lower punches slidable in opposed directions with relationship to a multiple cavity die plate. The upper ram and punches are operated in the downward stroke by a toggle and rocker arm mechanism which incorporates a readily adjustable eccentric means for controlling the length of upper ram stroke. The mechanism further includes a combination of first and second class levers which are cam driven in a cyclical press operation.

3,826,600

APPARATUS FOR THE PRODUCTION OF GRAMOPHONE RECORDS WITH LABELS ATTACHED THERETO

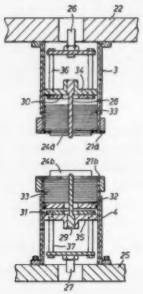
Henry James Hutton, Pinner, and Alan Thompson, Uxbridge, both of England, assignors to EMI Limited, Hayes, England

Filed June 30, 1972, Ser. No. 268,169

Claims priority, application Great Britain, July 5, 1971, 31316/71

Int. Cl. B29f *1/10*

U.S. Cl. 425—123 **5 Claims**



Apparatus of, and a method for, the production of gramophone records is described. Mouldable material is extruded, to form a shot, into a shot forming cavity which is at least partially closed during formation of the shot by a label magazine. In a preferred embodiment, the shot is formed in a cavity which is partially bounded by each of two label magazines.

3,826,601

APPARATUS FOR PRESSING CHIPBOARD PANELS

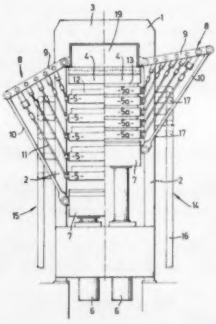
Wilhelm Hutter, Krefeld, Germany, assignor to Becker & van Hullen Niederrheinische Maschinenfabrik, Krefeld, Germany

Filed June 7, 1972, Ser. No. 260,671

Claims priority, application Germany, June 8, 1971, 2128427

Int. Cl. B29j *5/00;* **B29c** *3/00*

U.S. Cl. 425—338 **5 Claims**



A multi-deck heating press having vertical frame members at spaced points along its length, and conduits carrying liquid

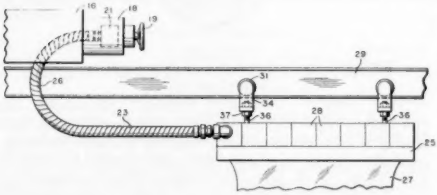
heating medium for the individual press decks, which pass close alongside some of these frame members, causing them to heat up, while other frame members remain cool. To eliminate differential thermal expansion due to some vertical frame members being heated while others remain cool, the said frame members have passageways provided therein, and fluid medium is circulated through these passageways. In one embodiment, heating medium is circulated through the cold frame members; in another coolant is circulated through the heated frame members; and in a third form, heating medium is circulated through some frame members and coolant through others. All vertical frame members of the press are brought to substantially the same temperature by the fluid medium, thereby eliminating thermal distortion in the press.

3,826,602

FLEXIBLE ADAPTER FOR CONVEYING MATERIAL FROM EXTRUDER TO DIE

Ronald L. Shaffer, Downingtown, and Frederic P. Stambaugh, West Chester, both of Pa., assignors to Beloit Corporation, Beloit, Wis.

Filed Sept. 29, 1972, Ser. No. 293,440
Int. Cl. B29f *3/08*
U.S. Cl. 425—378 **8 Claims**



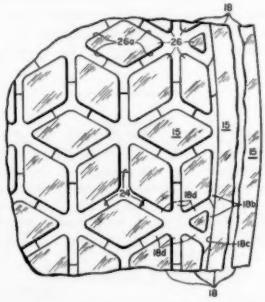
A flexible conduit secured to the outlet of an extruder, the opposite end of said conduit being fastened to a die. Heating means encompass the conduit to maintain the material therein in a flowable condition. The flexible conduit allows relative movement between the die and the extruder.

3,826,603

EXTRUSION DIE

Robert F. Wiley, 3 Oakwood Dr., Corning, N.Y. 14830

Division of Ser. No. 280,508, Aug. 14, 1972. This application Nov. 30, 1973, Ser. No. 420,660
Int. Cl. B29d *7/22*
U.S. Cl. 425—461 **4 Claims**



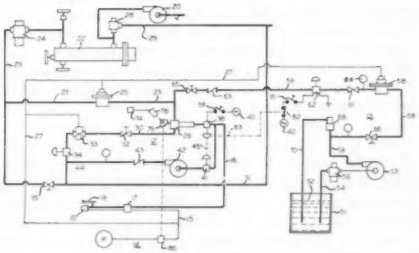
An extrusion die for forming ceramic material into core members or bodies for catalytic converters. A multiplicity of relatively minute passages are selectively etched through a plurality of similar relatively thin and flat plates or disks of a photosensitive glass or glass-ceramic material, the etched plates are stacked to form a laminated structure and are then fused into a substantially homogeneous or unitary die. The bottom plate of the laminated stack embodies a multiplicity of relatively minute and closely spaced apart columns each having a cross-sectional planar configuration which is substantially that of a rhombus with acute oblique angles of generally or on the order of about sixty degrees and with the relatively narrow passages between the columns extending continuously or coextensively but colinearly or in straight lines only a minimum distance in the direction across the plane of the bottom plate. The passages are etched into the bottom plate with only a very thin layer of the material of the plate left remaining adjacent to and beneath the bottom surface thereof for temporary support of the columns. The thin support layer is ground off of the bottom of the bottom plate to expose the passages and columns following the fusing of the plurality of plates into the homogeneous die, the columns then being supported by their having been previously fused to parts of the plate next above. The rhombus-shaped columns in the die provide for extrusion of cellular ceramic core members or bodies each having a multitude of passages extending longitudinally or axially therethrough parallel with each other and of minimum planar cross-sectional area with exposed wall surfaces each of a maximum areal extent for deposition of a catalytic agent thereon, such walls extending continuously but non-linearly in short straight-line directions normal to the longitudinal axes of the members or bodies so that some of the thermal expansion of the core members in such normal directions and upon subsequent heating of each member or body is contained or taken up within the member or body itself.

3,826,604

METHOD AND APPARATUS FOR CHEMICAL WASTE DISPOSAL

Roy M. Rulseh, Milwaukee, Wis., assignor to Aqua-Chem, Inc., Milwaukee, Wis.

Filed Aug. 23, 1972, Ser. No. 283,085
Int. Cl. F23n *1/02*
U.S. Cl. 431—12 **10 Claims**



A method and apparatus for disposing of flammable fluids by burning and including means for selectively injecting the fluids into the primary fuel supply of burner means at a controlled rate of injection.

3,826,605

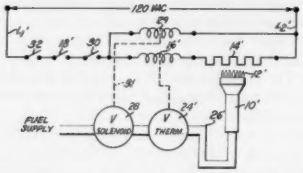
DIRECT BURNER IGNITION SYSTEM

Melvin E. Hantack, St. Louis, Mo., assignor to Eaton Corporation, Cleveland, Ohio

Filed Aug. 16, 1972, Ser. No. 281,067
Int. Cl. F23n *5/00*
U.S. Cl. 431—66 **18 Claims**

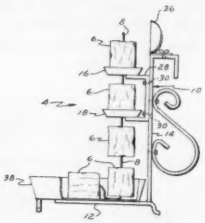
A fuel igniter element having a resistance value which varies inversely as a function of element temperature is mounted proximate to a burner outlet and is electrically series connected to a substantially constant resistance heater element. The heating element is operable to actuate a thermal valve at a predetermined current heating value to provide fuel to the burner. The series circuit is switchably connected to an electrical power source which when applied heats the igniter ele-

ment to the fuel ignition temperature of the fuel used. At this temperature, the lowered resistance of the igniter element allows the current flow to increase to the predetermined current



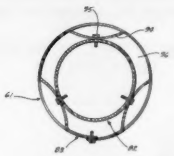
value thereby actuating the thermal valve. Upon actuation, the thermal valve allows fuel to flow from the burner which is then ignited by the igniter element.

3,826,606
SEGMENTED CANDLE
Burton G. Hicks, 55 Ridgecrest Cir., Westfield, Mass. 01085
Filed Aug. 7, 1973, Ser. No. 386,300
Int. Cl. F23d *3/16*
U.S. Cl. 431—295 **3 Claims**



A candle having a plurality of wax segments disposed in spaced relation along a continuous wick with a candle holder having at least two vertically spaced support platforms for holding the upper segments of the candle in fixed relationship.

3,826,607
COMBUSTION CHAMBER FOR DRYER
L. Dean Kuhn, Newton, Iowa, assignor to The Maytag Company, Newton, Iowa
Filed July 26, 1973, Ser. No. 382,866
Int. Cl. F23r *1/10;* **F26b** *11/02*
U.S. Cl. 432—105 **7 Claims**



A clothes dryer includes a fuel combustion chamber comprising a pair of telescoped housing portions defining a generally annular secondary air intake intermediate the opposite ends of the combustion chamber formed by the housing portions. The annular secondary air intake formed by the telescoped housing portions permits more complete combustion of the fuel while achieving a decreased surface temperature of the combustion chamber wall.

CHEMICAL

3,826,608
PROCESS AND COMPOSITION FOR DYEING OF HUMAN HAIR

Erik Wiskott, Bottmingen, Basel-Land, Switzerland, assignor to Therachemie Chemisch Therapeutische G.m.b.H., Dusseldorf, Germany

No Drawing. Filed Sept. 24, 1970, Ser. No. 75,305
Claims priority, application Germany, Oct. 2, 1969, P 19 49 750.8
Int. Cl. A61k *7/12*
U.S. Cl. 8—10.1 **10 Claims**

A process for the dyeing of living human hair consisting essentially of treating human hair at a temperature of from about 10° C. to 40° C. with an aqueous solution containing a nitropyridine having the formula

wherein X and Y are amino or substituted amino groups, and aqueous dyestuff compositions containing said nitropyridines.

3,826,609
METHOD OF DYEING SYNTHETIC FIBERS AND BLENDS

Shiro Shimauchi, Norihiro Minemura, Takeshi Matsui, and Kenji Ito, Osaka, and Takeo Shima, Shoji Kawase, and Masataka Oshima, Iwakuni, Japan, assignors to Teijin Limited, Osaka, Japan

No Drawing. Original application Mar. 4, 1969, Ser. No. 804,294, now Patent No. 3,666,403. Divided and this application May 16, 1972, Ser. No. 253,767
Int. Cl. D06p *3/82, 1/76*
U.S. Cl. 8—21 R **5 Claims**

A method of dyeing a textile fiber selected from the group consisting of a modified polyester, polyvinyl chloride, polyacrylonitrile and cellulose acetate fibers, which comprises dyeing the fibers with an anionic dyestuff in the presence of at least one compound selected from sulfonium salts of the formula

$$\left[\begin{matrix} R_1 \\ | \\ R-S-R_2 \end{matrix}\right]^+ X^- \text{ or } \left[\begin{matrix} R_1 \\ | \\ R-O-R_3-S-R_4-O-R_2 \end{matrix}\right]^+ X^-$$

wherein R, R_1 and R_2 are each selected from the group consisting of alkyl, alkenyl, cycloalkyl, aryl and aralkyl groups of 1–18 carbon atoms, R_3 and R_4 are each alkyl groups of 1–5 carbon atoms and X is selected from the group consisting of halogens, alkoxy sulfate and OH group.

3,826,610
PULVERULENT MIXTURE FOR TANNING RAW ANIMAL HIDES AND LEATHER

Ernst Komarek, Leverkusen, and Heinrich Spahrkas, Bergisch-Neukirchen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

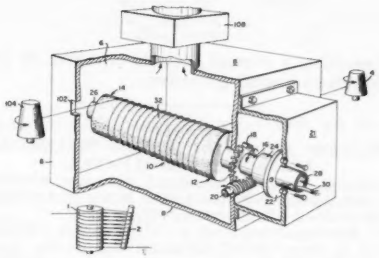
No Drawing. Filed June 15, 1972, Ser. No. 263,076
Claims priority, application Germany, July 8, 1971, P 21 34 070.5
Int. Cl. C14c *3/06, 9/02*
U.S. Cl. 8—94.26 **5 Claims**

A pulverulent mixture for tanning hides and leather comprising (a) a chrome tanning agent, (b) a product of the chlorination of paraffin hydrocarbons of about 8–24 carbon atoms and having a chlorine content of about 20–50% by weight, and (c) an adduct of about 20 to 70 moles of ethylene oxide to one mole of an alkylphenol, arylalkylphenyl or fatty alcohol. The mixture disperses readily in water to form stable tanning emulsions which yield leathers characterized by softness, smoothness and superior grain characteristics.

3,826,611
CONTINUOUS TREATMENT OF A POLYACRYLONITRILE AT ELEVATED TEMPERATURES ON A POROUS ROLL

Dagobert E. Stuetz, Westfield, N.J., assignor to Celanese Corporation, New York, N.Y.

Original application Oct. 10, 1969, Ser. No. 865,334, now Patent No. 3,632,092. Divided and this application Aug. 4, 1971, Ser. No. 169,044
Int. Cl. C01b *31/07;* **D06m** *3/22*
U.S. Cl. 8—115.5 **5 Claims**



An improved continuous process and apparatus are provided for the uniform stabilization of a strand of polymeric fibrous material which is capable of undergoing thermal stabilization. The strand is continuously wound in a plurality of turns and continuously unwound from at least one rotating roll having a porous surface while a gas at an elevated temperature is expelled outwardly through the surface of the porous roll and penetrates the fibrous configuration of the strand wound upon the roll. In a preferred apparatus in accordance with the present invention the porous roll situated within a heat treatment chamber is internally provided with a plurality of individually adjustable heating elements along its length. The resulting stabilized material retains its original fibrous configuration essentially intact, exhibits enhanced thermal stability, and is capable of undergoing carbonization. In a particularly preferred embodiment of the invention the precursor is an acrylonitrile homopolymer and air having a temperature of at least about 260° C. is expelled through the surface of the rotating porous roll.

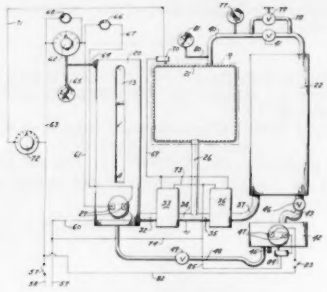
3,826,612
AUTOCLAVE

Robert B. Black, 2925 Denver St., Corpus Christi, Tex. 78404

Application Aug. 19, 1971, Ser. No. 173,237, now Patent No. 3,717,434, which is a continuation of abandoned application Ser. No. 813,537, Apr. 4, 1969. Divided and this application July 10, 1972, Ser. No. 270,306
Int. Cl. A61l *3/00*
U.S. Cl. 21—94 **2 Claims**

An autoclave, particularly adapted for use as a sterilizer, and in which the functions of steam generation and sterilization are performed in separate steam generating and autoclaving chambers, with provision for controlled delivery of steam from the generating chamber to the autoclaving chamber. A feed water system is also provided

incorporating a receptacle for receiving sequential batches of feed water and for heating such batches to a temperature providing a pressure adequate to deliver the batch into the steam generating chamber.



3,826,613

DETECTION AND TITRATION OF VIRUSES AND ANTIBODIES USING LATEX

Gokaldas C. Parikh and Thomas C. Sorensen, Brookings, S. Dak., assignors to the United States of America as represented by the Secretary of the Navy

No Drawing. Filed Mar. 6, 1973, Ser. No. 338,495
Int. Cl. G01n *31/00*
U.S. Cl. 23—230 B **10 Claims**

A method of counting viruses and antibodies, employing uniform diameter, latex particles in a suspension to which an unknown amount of virus particles or antibody molecules is added. The adsorption of the virus particles or antibody molecules on the latex causes agglutination of the latter. The types and amount of agglutination can be determined by using a Coulter Counter. From the sizes and the amounts of the specific aggregates formed, the type and quantity of virus particles or antibody molecules can be determined by comparison with data for known samples. The time for comparison may be reduced by precoating the latex particles with viruses or antibodies before the unknown antibody or virus containing sample is added. Tagging the unknown virus particles with a fluorescently tagged enzyme will also reduce comparison time. Alternatively, the fluorescence of the tagged virus particles can be employed to determine the number of virus particles in an unknown sample.

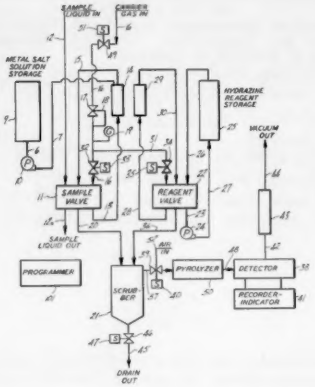
3,826,614

TOTAL MERCURY MONITOR

Italo A. Capuano, Orange, Conn., assignor to Ionics, Incorporated, Watertown, Mass.

Continuation-in-part of applications Ser. No. 75,927, Sept. 28, 1970, now Patent No. 3,713,776, and Ser. No. 115,175, Feb. 16, 1971, now Patent No. 3,704,097. This application May 17, 1972, Ser. No. 254,251
Int. Cl. G01n *21/26, 31/10, 33/18*
U.S. Cl. 23—230 R **14 Claims**

Apparatus and method are provided for analyzing liquid streams for their content of mercury including elemental mercury, ionic mercury and undissociated mercury compounds such as phenyl mercury and methyl mercury. The sample is automatically measured and first treated with an acidic metal salt reagent containing an oxidant for oxidizing elementary mercury in the sample to ionic mercury and then with hydrazine to form a suitable catalytic colloid. Elementary mercury is then formed by the action of hydrazine and the catalytic colloid on the ionic and combined mercury and is transferred to a photometric detector. The results are indicated and/or recorded automatically, accurately and rapidly. The apparatus and method are especially useful in the control of mercury contamination in the environment and also for monitoring chemical process streams.

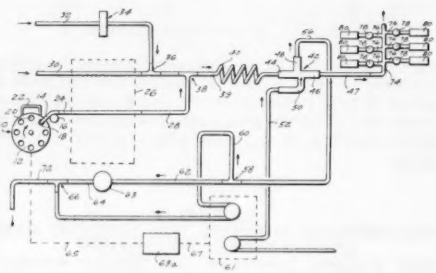


3,826,615

FLUID SYSTEM FOR INCLUSION IN A TOTAL AUTOMATED FLUID SYSTEM OF A SAMPLE ANALYZER

William J. Smythe, Tarrytown, and S. Lawrence Bellinger, Lake Luzerne, N.Y., Herman G. Diebler, North Haledon, N.J., and Robert Dannewitz, Yonkers, N.Y., assignors to Technicon Instruments Corporation, Tarrytown, N.Y.

Filed June 9, 1972, Ser. No. 261,481
Int. Cl. G01n *1/18, 33/16*
U.S. Cl. 23—230 R **18 Claims**



A fluid system for inclusion in an automated fluid system for analyzing a series of liquid samples flowing seriatim, the first-mentioned system serving to dilute each sample for subsequent division into a large number of parts. Each diluted part is intended for flow to one of a large number of different subcombinations of the total system. In each of the subcombinations the diluted sample part may receive a special treatment, such as mixing with a particular reagent or reagents under controlled temperature conditions for example, prior to analysis of that sample portion as by photometry for example. Each diluted

sample part may be subjected to a different test or analysis. There is involved in the first-mentioned system the same and equal dilution treatment of each sample as the series. Also involved in the first-mentioned system is the effective inhibition of cross contamination of samples from the point of introduction of the samples into the dilution system to the point, after division of the samples as aforesaid, where the samples flow into the respective ones of the aforesaid analysis subcombinations.

3,826,616

METHOD OF DIAGNOSING PREGNANCY IN MILK-PRODUCING ANIMALS BY PROGESTAGEN ASSAY

John Archibald Laing, Lower Meadow, Ayot St. Lawrence, Welwyn, England

No Drawing. Filed July 18, 1972, Ser. No. 272,947
Claims priority, application Great Britain, July 22, 1971, 34,519/71
Int. Cl. G01n *33/04, 33/16*
U.S. Cl. 23—230 B **10 Claims**

Method of diagnosing the condition of pregnancy in milk-producing animals wherein the milk of the inseminated animal is subjected to progestagen assay to detect an increase in progestagen concentration therein.

3,826,617

METHOD FOR DETERMINING SUGAR/STARCH CONTENTS IN AQUEOUS SOLUTIONS

Roy M. Chatters, Pullman, Wash., James E. Kimbrell, Monroeville, Pa., and Shelby D. Slater, Pullman, Wash., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed Oct. 31, 1972, Ser. No. 302,452
Int. Cl. G01n *23/00, 33/18*
U.S. Cl. 23—230 M **6 Claims**

A method for determining simple reducing sugar concentration in aqueous solutions comprises rendering the solution strongly basic, adding a solution consisting of potassium iodide and $^{203}HgI_2$ to the basic solution, heating the resulting solution to an elevated temperature near boiling for a period of time to reduce the radio-mercury to elemental mercury, sorbing said elemental mercury on diatomaceous earth, separating the diatomaceous earth-mercury solids and thereafter analyzing the retained solids for ^{203}Hg. In an alternative embodiment, nonradioactive mercury (as mercury iodide) may be used with neutron activation to form a radio-mercury isotope, such as ^{203}Hg, which can then be analyzed. Starch concentration may also be determined by first converting any starch present to a simple reducing sugar by enzymatic hydrolysis and the thus formed sugar concentration determined by this method.

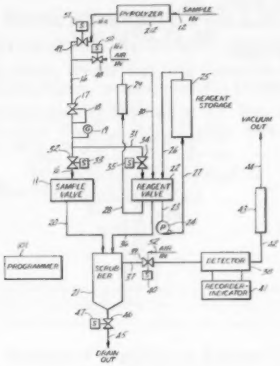
3,826,618

AUTOMATIC MERCURY MONITOR

Italo A. Capuano, Orange, Conn., assignor to Ionics, Incorporated, Watertown, Mass.

Continuation-in-part of application Ser. No. 75,927, Sept. 28, 1970, now Patent No. 3,713,776, dated Jan. 30, 1973. This application July 10, 1972, Ser. No. 269,995
Int. Cl. G01n *21/24, 31/06*
U.S. Cl. 23—232 R **10 Claims**

Apparatus and method are provided for analyzing gas streams for their content of ionic, elemental and organic mercury even in the presence of other contaminants, including elemental or available chlorine or organic matter. The sample is first pyrolyzed and then automatically measured and treated with aqueous reducing reagent. The resulting elemental mercury is transferred to a photometric detector and the results are indicated and/or recorded automatically, accurately and rapidly. The apparatus and method are especially useful in the control of mercury contamination in the environment and also for monitoring chemical process streams.

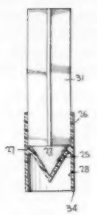


3,826,619

TEST APPARATUS FOR DIRECT RADIOIMMUNOASSAY FOR ANTIGENS AND THEIR ANTIBODIES

Nicholas George Bratu, Jr., Evanston, and James Frederick Jeffries, Jr., Waukegan, Ill., assignors to Abbott Laboratories, North Chicago, Ill.

Filed Dec. 21, 1971, Ser. No. 210,511
Int. Cl. G01n *33/16*
U.S. Cl. 23—253 R **14 Claims**



Test apparatus for direct radioimmunoassay for antigens or their antibodies are either coated test tubes or coated inserts which are designed to either fit snugly into the base of a test tube or allow space for free mixing of the test solution.

3,826,620

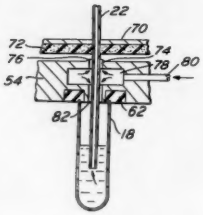
NITRITE CONCENTRATION CONTROL DEVICE FOR WATER BASE METALWORKING FLUIDS

Charles A. Simpson, Aston, Pa., and Robert H. Davis, Pitman, and Michael Sedlak, Woodbury, N.J., assignors to Mobil Oil Corporation

No Drawing. Filed Oct. 6, 1972, Ser. No. 295,632
Int. Cl. G01n *31/22*
U.S. Cl. 23—253 TP **10 Claims**

A device is provided for determining nitrite concentration of liquids by saturating a cellulosic material impregnated with potassium iodide and starch with a solution of a non-volatile acid having a pKa of from about 2 to about 5 and a non-volatile reductant, and drying the cellulosic material thus treated.

3,826,621
APPARATUS FOR TRANSFERRING A LIQUID FROM ONE CONTAINER TO ANOTHER
Edgar G. Johnson, Jr., Huntsville, and James J. Cornelison, Gurley, Ala., assignors to Micromedic Systems, Inc., Philadelphia, Pa.
Filed May 1, 1972, Ser. No. 248,919
Int. Cl. G01n 1/14
U.S. Cl. 23—259 **21 Claims**



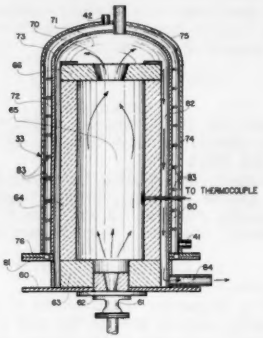
Liquid in selected quantities is transferred through a conduit from a container to the operative section of an analytical instrument by applying gas pressure to the surface of the liquid for a predetermined amount of time. The chamber for coupling the gas pressure to the surface of a liquid is provided with a gas bypass to prevent spraying of the liquid. The gas pressure is directed onto the surface of the conduit to remove any liquid that remains on the conduit after a selected quantity has been transferred to the operative part of the analytical instrument.

3,826,622
CONTAINERS FOR USE IN AN AUTOMATED CENTRIFUGE
Samuel Natelson, Chicago, Ill., assignor to Rohe Scientific Corporation, Santa Ana, Calif.
Continuation-in-part of application Ser. No. 845,992, July 30, 1969, now Patent No. 3,722,790. This application May 15, 1972, Ser. No. 253,167
Int. Cl. B01l 3/00; B04b 7/00
U.S. Cl. 23—259 **11 Claims**

System for the sequential treatment of liquid chemical samples comprising the steps of depositing the samples in a series of top-like containers having a peripheral side chamber. The containers are placed on a belt and move past a centrifugal field wherein the containers are rotated. The containers are then removed at a terminal zone and the heavier sample component remains in the side chamber as the lighter components flow to the bottom of the container.

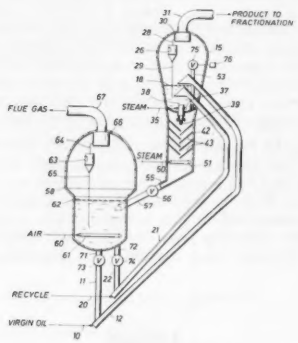
3,826,623
EXOTHERMIC GAS GENERATOR
Manuel M. Delgado, La Mirada, Calif. (% John E. Wagner, attorney at law, 1041 E. Green St., Suite 201, Pasadena, Calif. 91106)
Filed Feb. 7, 1972, Ser. No. 224,058
Int. Cl. B01j 7/00; C10b 1/04
U.S. Cl. 23—281 **14 Claims**

A vertically oriented reaction chamber for the production of gaseous products from the combination of air and fuel. The reaction chamber is contained within an outer shell with a flow path of incoming fuel and air at the bottom to the reaction chamber and a restricted outlet at the top of the reaction chamber communicating with



a domed space within the outer shell. A reentrant gas flow path is defined by the reaction chamber and the shell. Temperature and pressure responsive valves control either the discharge or collection of gaseous products.

3,826,624
FLUID CATALYTIC CRACKING
Henry B. Jones and Dorrance P. Bunn, Jr., Houston, Tex., assignors to Texaco Inc., New York, N.Y.
Filed July 31, 1972, Ser. No. 276,619
Int. Cl. B01j 9/20; C10g 35/14
U.S. Cl. 23—288 S **6 Claims**



A fluid catalytic cracking unit wherein the reaction zone comprises one or more risers and a reaction vessel; wherein catalyst and oil vapors continually discharge from the risers into the reaction vessel; and wherein the reaction vessel is in communication with a stripping zone such that spent catalyst flows into the stripping zone. In operation, a selected inventory of catalyst is maintained in a fluidized state in the reaction vessel. Such selected catalyst inventory in the reactor vessel is maintained by means responsive to the pressure differential between the stripping zone and the reactor vessel. Means are also provided for controlling such pressure differential and thereby adjusting catalyst inventory in the reactor vessel.

3,826,625

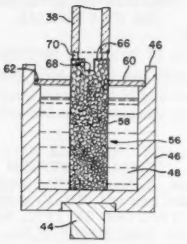
METHOD AND APPARATUS FOR GROWING CRYSTALLINE BODIES FROM THE MELT USING A POROUS DIE MEMBER

John S. Bailey, Charlestown, Mass., assignor to Tyco Laboratories, Inc., Waltham, Mass.

Filed Nov. 8, 1971, Ser. No. 196,450

Int. Cl. B01j 17/18

U.S. Cl. 23—301 SP 14 Claims



The invention is an improvement over the method described in U.S. Pat. No. 3,591,348 for growing crystalline bodies from the melt. The improvement essentially consists of using a porous forming member (also called a die) that is characterized by an interconnecting network of pores or cells of capillary proportions.

3,826,626

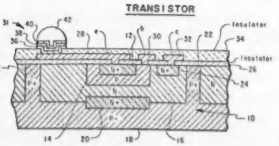
ELECTRICAL CONDUCTOR HAVING A HIGH RESISTANCE TO ELECTROMIGRATION

Harshad J. Bhatt and James W. Tuttle, Wappingers Falls, N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.

Original application Dec. 17, 1970, Ser. No. 99,036, now Patent No. 3,631,305. Divided and this application Oct. 1, 1971, Ser. No. 185,713

Int. Cl. H01b 1/02

U.S. Cl. 29—191.6 9 Claims



This disclosure is directed to an improved semiconductor device, electrical conductor, thin film conductor, alloy and fabrication methods therefor. An aluminum-oxide-copper alloy conductor is disclosed which has a high resistance to electromigration and hence, a conductor lifetime greater by at least a factor of 10 than unalloyed aluminum conductors. Semiconductor devices utilizing this aluminum alloy in the thin film conductive stripes interconnecting different conductivity regions or devices located in the semiconductor substrate are significantly improved and more reliable.

3,826,627

DECORATIVE COMPOSITE ARTICLES

Michael J. Pryor, Woodbridge, and James M. Popplewell, Guilford, Conn., assignors to Olin Corporation

Continuation-in-part of application Ser. No. 78,899, Oct. 7, 1970, now Patent No. 3,676,292. This application Mar. 6, 1972, Ser. No. 231,834

Int. Cl. B32p 3/02, 3/06, 3/20

U.S. Cl. 29—195 7 Claims

The present invention relates to a decorative composite article having a decorative portion and comprising at least one first metal component and a second metal component of different composition from the first metal component bonded thereto wherein the first component has on its surface an aluminum oxide layer. The decorative pattern of the composite article is further coated with a glass or ceramic.

3,826,628

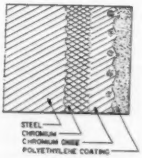
COATED STEEL PRODUCT

Ramon Leonard Addinall, Stoney Creek, William Trevor Lewis, Burlington, and Otokar Mudroch, Dundas, Ontario, Canada, assignors to The Steel Company of Canada Limited, Hamilton, Ontario, Canada

Original application May 6, 1970, Ser. No. 35,102, now Patent No. 3,679,513, dated July 25, 1972. Divided and this application Apr. 24, 1972, Ser. No. 246,905

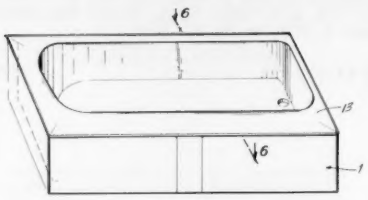
Int. Cl. B32b 15/18

U.S. Cl. 29—195 6 Claims



A coated steel product comprising a steel sheet substrate having a film of lower polyolefin or film of a copolymer of a major amount of a lower olefin with a minor amount of a copolymerizable monomer having polar functional groups coated thereon. The product is characterized by an intermediate layer of chromium/chromium oxide on the substrate on which the polyolefin film has been coated. The product exhibits excellent resistance to corrosion and delamination.

3,826,629
PRODUCTS FORMED OF GLASS OR CERAMIC-METAL COMPOSITES
Michael J. Pryor, Woodbridge, and James M. Popplewell, Guilford, Conn., assignors to Olin Corporation
Continuation-in-part of applications Ser. No. 78,899, Oct. 7, 1970, now Patent No. 3,676,292, Ser. No. 231,834, Mar. 6, 1972, and Ser. No. 254,666 May 18, 1972. This application July 7, 1972, Ser. No. 269,768
Int. Cl. B23p *3/00;* B32b *3/02*
U.S. Cl. 29—195 **21 Claims**



Articles having an aesthetically pleasing appearance and improved durability. The articles include plumbing fixtures, electrical fixtures, bathroom fixtures, household utensils, picture frames, jewelry, etc. The articles are formed of a glass or ceramic-metal composite comprising a glass or ceramic component bonded to a copper base alloy component. The copper base alloy component comprises about 2 to 12% aluminum and the balance essentially copper. Additional mechanical support may be provided by a backing, of metal plastic or wood affixed to the composite.

3,826,630
COATING FOR DIAMONDS
Alexander Rose Roy, Johannesburg, Transvaal, Republic of South Africa, assignor to De Beers Consolidated Mines Limited, Kimberley, Cape Province, Republic of South Africa
No Drawing. Continuation-in-part of abandoned application Ser. No. 31,389, Apr. 23, 1970. This application Sept. 14, 1972, Ser. No. 289,141
Int. Cl. B32b *15/04*
U.S. Cl. 29—195 **3 Claims**

A diamond having a coating which comprises a first layer of molybdenum chemically bonded to the diamond, and a second layer on the first layer selected from the group consisting of iron and an iron-containing alloy, the interface between the molybdenum layer and the iron-containing layer consisting of an alloy of iron and molybdenum formed by mutual solid state diffusion at a temperature not exceeding 800° C. This coated diamond is produced by depositing a layer of molybdenum on the uncoated diamond, depositing a layer of iron or iron-containing alloy on the molybdenum layer, and heating the coated diamond to a temperature of between 550° C. and 800° C. in an inert or reducing atmosphere.

3,826,631
ODORANT COMPOSITION FOR LIQUEFIED PETROLEUM GASES
Ashley Dwight Nevers, King of Prussia, Pa. (% Pennwalt Corporation, 1012 Pennwalt Bldg., Philadelphia, Pa. 19102)
No Drawing. Continuation-in-part of abandoned application Ser. No. 153,853, June 16, 1971. This application Mar. 27, 1972, Ser. No. 238,541
Int. Cl. C10l *1/24*
U.S. Cl. 44—52 **9 Claims**

Improved odorant composition for liquefied petroleum gases includes an azeotropic mixture of an organic sulfur compound selected from the group consisting of ethyl mercaptan and dimethyl sulfide and at least one relatively non-odorous, chemically inert material, such as methyl formate, n-pentane, isopentane, amylene, isoamylene, chloropropane and the like, capable of forming a minimum boiling point azeotrope with the organic sulfur odorant compound present.

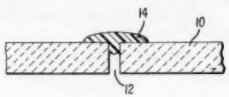
3,826,632
PETROLEUM FUEL OIL AND BLACK LIQUOR COMBUSTION
Frederic L. Morgan, Sylacauga, Ala., assignor to Buckman Laboratories, Inc., Memphis, Tenn.
No Drawing. Filed Jan. 25, 1972, Ser. No. 220,674
Int. Cl. C10l *1/18*
U.S. Cl. 44—66 **14 Claims**

The efficiency of processes involving the burning of petroleum fuel oils and high solids content black liquor is improved by adding N,N-dimethylamides of unsaturated carboxylic acids to the petroleum fuel oils and black liquor.

3,826,633
FUEL ADDITIVES
Marvin D. Coon, Vallejo, Calif., assignor to Chevron Research Company, San Francisco, Calif.
No Drawing. Filed Oct. 24, 1972, Ser. No. 296,372
Int. Cl. C10l *1/24*
U.S. Cl. 44—72 **5 Claims**

The present invention is concerned with more effective deposit control additives for hydrocarbonaceous fuels which are hydrocarbylaminopolymethylenesulfonic acids. These additives are the reaction products produced by sulfoalkylating certain hydrocarbyl-substituted amines. The sulfoalkylation can be accomplished by reacting the hydrocarbyl-substituted amines with alkane sultones in approximate mol ratio 2–1:1–2. The hydrocarbyl substituent contains at least about 30 carbon atoms.

3,826,634
PLUG SEALING OF HERMETIC ENCLOSURES
Henry Leo Blust, Lyndhurst, and Norman Lee Lindburg, Berkeley Heights, N.J., assignors to RCA Corporation
Filed Feb. 5, 1973, Ser. No. 329,616
Int. Cl. C03b *29/00*
U.S. Cl. 65—34 **2 Claims**

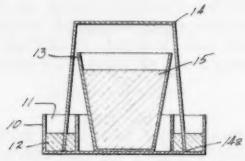


A plug comprising a viscous mass of glass powder in a liquid carrier is disposed within an exhaust port of the envelope of a device to be sealed. The plug mass is heated at a low temperature to drive-off the carrier leaving a plug adherent to and completely closing the exhaust port, the plug, however, being porous to gasses. The device is exhausted through the porous plug, and the plug then heated to fuse together the glass particles to hermetically seal the port.

3,826,635
GLASS MELTING
Dallas P. Hall and Bulent E. Yoldas, Toledo, Ohio, assignors to Owens-Illinois, Inc.
Filed Jan. 5, 1973, Ser. No. 321,290
Int. Cl. C03b *5/00, 5/08*
U.S. Cl. 65—134 **3 Claims**

Disclosed is a glass melting technique, which improves glass homogeneity, wherein the vapor phase generated by the melting of the glass batch materials is confined in the

vicinity of the glass melt by a liquid seal of molten glass. Preferably, the molten glass forming the liquid seal has substantially the same composition as the glass being melted.



3,826,636

CHANNEL FOR THE CONVEYANCE OF LIQUID GLASS

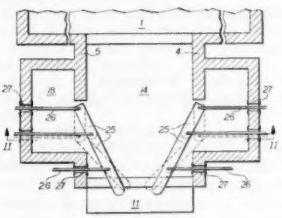
Franz Classen, Porz-Grengel, Germany, assignor to Erste Deutsche Floatglas GmbH & Co. OHG, Porz-Cologne, Germany

Continuation of abandoned application Ser. No. 885,499, Dec. 16, 1969. This application Dec. 20, 1971, Ser. No. 209,892

Claims priority, application Germany, Jan. 4, 1969, P 19 00 388.4

Int. Cl. C03b *18/00*

U.S. Cl. 65—182 R **6 Claims**



A channel for the conveyance of molten glass comprises a body of molten metal such as tin whose temperature can be regulated, and on which the glass floats. There are chambers located on opposite sides of the channel which communicate with the channel to supply molten tin to the channel. Both the chambers and the channel are equipped with heating and cooling elements. There are adjustably mounted lateral blocks having heating means within the blocks located toward the outlet end of the channel to limit the width of the molten glass stream therein.

3,826,637

MANUFACTURE OF FLAT GLASS BY FLOTATION

Jean Albert Lecourt, Villejuif, France, assignor to Saint-Gobain Industries, Neuilly-sur-Seine, France

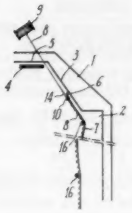
Filed Sept. 21, 1972, Ser. No. 290,874

Claims priority, application France, Aug. 26, 1971, 7130968

Int. Cl. C03b *18/02*

U.S. Cl. 65—182 R **7 Claims**

A method of making flat glass which comprises depositing molten glass upon the upstream part of a molten flotation bath, drawing the glass downstream over the bath and spreading the glass over the bath between divergent retaining means by the forces of gravity and surface tension, thereby forming a moving ribbon, introducing moving, flexible guide means into the edges of the ribbon at an upstream location, and establishing the dimensions of the ribbon by coordinating the distance between the flexible guide means, the speed of the ribbon, and the tension on the flexible guide means. Simple and effective apparatus are provided to carry out the process.



3,826,638

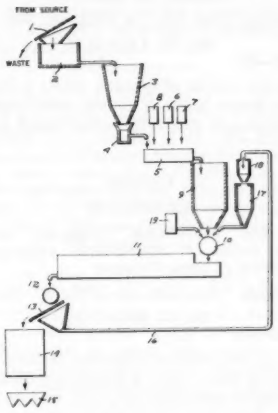
ORGANIC FERTILIZERS AND THEIR PRODUCTION

Franklin A. Whitman, Benton, Maine (R.F.D. 2, Waterville, Maine 04901)

Continuation-in-part of application Ser. No. 362,548, Sept. 15, 1972, which is a continuation-in-part of application Ser. No. 200, Jan. 2, 1970, both now abandoned. This application May 21, 1973, Ser. No. 362,548

Int. Cl. C05f *3/00*

U.S. Cl. 71—21 **19 Claims**



An organic fertilizer and method of making the same is disclosed, the fertilizer being produced by mixing with wet manure at least .1% by weight of polyalkaline amine to that of the dry manure and at least the mole equivalent of an aldehyde. The product is then dried for a time and at a temperature such that the fertilizer is rendered sufficiently water insoluble to ensure that the available nitrogen is slowly released when the fertilizer is applied.

3,826,639

AGENT FOR KEEPING CUT FLOWERS FRESH

Ernst-Heinrich Pommer, Limburgerhof, and Hannelore Will, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Feb. 4, 1972, Ser. No. 223,758

Int. Cl. A01n *3/02*

U.S. Cl. 71—68 **10 Claims**

Agent for keeping cut flowers or other plant parts fresh which contains, in addition to conventional ingredients, a

chlorocholine salt, citric acid, a silver salt and a salt of N-nitroso-N-cyclohexylhydroxylamine, and a process for keeping cut flowers fresh with this agent.

3,826,640

SUBSTITUTED BENZOYLPHOSPHONATES AS HERBICIDES

Robert J. Theissen, Westfield, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed Aug. 10, 1971, Ser. No. 170,636

Int. Cl. A01n *9/36*

U.S. Cl. 71—86 **6 Claims**

Substituted benzoylphosphonates form a class of compounds which exhibit herbicidal activity, and, of which, certain substituted benzoylphosphonates are novel compounds. In herbicide tests, the compounds of this invention are highly effective against undesirable grasses, such as Crabgrass, Yellow Foxtail grass, Johnson grass and Barnyard grass; and against undesirable broadleaf herbs, such as Pigweed. In low use concentrations, the compounds of the present invention retain their high effectiveness against undesirable grasses and broadleaf herbs while showing selectivity in favor of important crop species, such as cotton and corn.

3,826,641

METHOD FOR INCREASING THE SUCROSE CONTENT OF GROWING PLANTS

Clark A. Porter, Kirkwood, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Feb. 12, 1973, Ser. No. 331,911

Int. Cl. A01n *9/36*

U.S. Cl. 71—86 **12 Claims**

The sucrose content of growing plants is increased by treating the plants, prior to harvest, with 1-hydroxy-1,1-ethanediphosphonic acid or an alkali metal salt thereof.

3,826,642

HERBICIDE

Adolf Fischer, Mutterstadt, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Mar. 11, 1970, Ser. No. 18,713

Int. Cl. A01n *9/14*

U.S. Cl. 71—91 **4 Claims**

Herbicides containing a substituted benzothiadiazinone dioxide and at least one of a substituted decahydroquinazoline, a substituted polycyclic urea or a bromoaminopyridazone derivative as an additional active ingredient, and a process for controlling the growth of unwanted plants with these mixtures.

3,826,643

METHOD OF CONTROLLING UNDESIRABLE PLANT SPECIES USING 3-NITROPYRIDINES

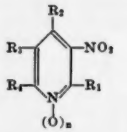
Robert Eugene Diehl, Trenton, and Bryant Leonidas Walworth, Pennington, N.J., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 658,589, Aug. 7, 1967, now Patent No. 3,547,935, dated Dec. 15, 1970. This application Aug. 3, 1970, Ser. No. 60,776

Int. Cl. A01n *9/22*

U.S. Cl. 71—94 **10 Claims**

There is provided a method for the pre-emergence or post-emergence control of undesirable plant species by applying to soil, seed or foliage a herbicidally effective amount of a compound of the formula:



wherein R_1 stands for hydrogen, halogen, lower alkyl, halo lower alkyl or OR^1 wherein R^1 is lower alkyl or halo lower alkyl; R_2 is hydrogen, halogen, hydroxy, SR^2 or OR^3 wherein R^2 and R^3 are each hydrogen or lower alkyl; R_3 is hydrogen, halogen or nitro; R_4 is hydrogen, halogen, alkyl or halo lower alkyl; and n is either 0 or 1; and the salts of said compounds.

3,826,644

HERBICIDAL N'-ARYL-N-CHLOROCYCLOALKYLTHIO UREAS

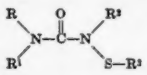
John W. Kobzina, Berkeley, Joseph F. Moore, Richmond, and Gustave K. Kohn, Berkeley, Calif., assignors to Chevron Research Company, San Francisco, Calif.

No Drawing. Original application July 14, 1970, Ser. No. 54,855, now Patent No. 3,711,530. Divided and this application Nov. 2, 1972, Ser. No. 303,190

Int. Cl. A01n *9/12*

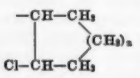
U.S. Cl. 71—98 **12 Claims**

Compound of the formula



wherein R and R^1 are hydrogen, alkyl of 1 to 12 carbon atoms substituted with 0 or 4 halogen atoms of atomic number 9 to 35, cycloalkyl of 3 to 12 carbon atoms substituted with 0 to 4 halogen atoms of atomic number 9 to 35, aryl of 6 to 12 carbon atoms substituted with 0 to 4 halogen atoms of atomic number 9 to 35, nitro groups or alkoxy groups of 1 to 6 carbon atoms; R^2 is alkyl of 1 to 10 carbon atoms substituted with 0 to 4 halogen atoms of atomic number 17 to 35, cycloalkyl of 5 to 10 carbon atoms substituted with 0 to 4 halogen atoms of atomic number 17 to 35; and R^3 is either

(a)



wherein n is an integer of from 1 to 8, or

(b) monochloronorbornyl

The compounds are herbicides.

3,826,645

MATERIAL FOR PRODUCING A METALLIC COATING ON THE INNER SURFACES OF A CATHODE RAY TUBE

Frederick P. Scott, Syracuse, N.Y., assignor to King Laboratories, Inc., Syracuse, N.Y.

No Drawing. Filed May 8, 1972, Ser. No. 251,029

Int. Cl. B22f *1/00*

U.S. Cl. 75—.5 R **8 Claims**

A metal support containing a quantity of a metallic mixture including an aluminum and magnesium alloy

which, when heated to the proper temperature will flash causing the magnesium to vaporize. The magnesium vapor will condense on the inside surfaces of the tube. The mixture also contains a metal in the free state which will combine with the aluminum during and subsequent to the vaporization of the magnesium preventing the formation of loose particles of aluminum, and also preventing molten aluminum from attacking the support.

3,826,646

METHOD FOR TREATING MELTS AND MEANS FOR CARRYING OUT THIS TREATMENT

Gosta Karlsson, Harnevigatan 26; Per Samuelsson, Bangatan 17; and Per Erik Hammarlund, Hasselvagen 6, all of Vasteras, Sweden

Continuation of application Ser. No. 866,161, Oct. 13, 1969, which is a continuation of application Ser. No. 538,633, Mar. 30, 1966, both now abandoned. This application Mar. 26, 1973, Ser. No. 344,514

Int. Cl. C21c *5/52, 7/10*

U.S. Cl. 75—13 **6 Claims**

Molten metal is heated in a covered ladle equipped with electrodes and multi-phase electromagnetic stirring coils. Energization creates a toroidal pattern of movement within the melt. The melt is then degassed by the evacuation of the space over the melt.

3,826,647

METHOD OF OBTAINING LOW-PHOSPHORUS CONTENTS IN MEDIUM- AND HIGH-CARBON STEELS IN A BOTTOM-BLOWN OXYGEN STEELMAKING FURNACE

Donald A. Dukelow, Mount Lebanon Township, Allegheny County, Phillip B. Hunter, Plum Borough, and Robert J. King, Churchill Borough, Pa., assignors to United States Steel Corporation

Continuation-in-part of abandoned application Ser. No. 205,353, Dec. 6, 1971. This application Nov. 13, 1972, Ser. No. 306,138

Int. Cl. C21c *7/02*

U.S. Cl. 75—60 **16 Claims**

A method for directly producing medium and high carbon steels with low phosphorus contents in a bottom blown basic steel refining process in which finely divided lime is entrained in the oxygen stream. The improvement comprises employing an overall average lime load rate (L_0) throughout the whole blow of about 0.09 to 0.16 lbs. lime/ft.^{3} of oxygen, wherein the average rate for the first half of the blow (L_1) is less than L_0 and the average rate for the second half of the blow (L_2) is greater than L_0. Phosphorus reduction is additionally enhanced by decreasing the blowing time, i.e., increasing the oxygen blowing rate.

3,826,648

METHOD OF PURIFYING ZINC SULPHATE SOLUTIONS

Fernand Jacques Joseph Bodson, Angleur, Belgium, assignor to Societe des Mines et Fonderils de Zinc de la Vielle Montagne, Angleur, Belgium

No Drawing. Filed Sept. 7, 1972, Ser. No. 287,193

Claims priority, application Belgium, May 16, 1972, 43,706

Int. Cl. C22b *15/12, 17/04, 23/04*

U.S. Cl. 75—109 **11 Claims**

A zinc sulphate solution resulting from the leaching of zinc ores is treated by a method of purifying comprising adding to said solution which has been previously purified by means of coprecipitation of hydrolysable impurities with iron hydroxide, metallic zinc in an amount such that the copper and cadmium present are eliminated by cementation; separating the copper cement and cadmium cement from the solution; heating the solution to a temperature between 80° C. and its boiling point; adding to the solution antimony and zinc powder in amounts such that the cobalt and the other impurities are eliminated by cementation from the zinc sulphate solution, and separating the cobalt cement and the other impurities from the solution.

3,826,649

NICKEL-CHROMIUM-IRON ALLOY

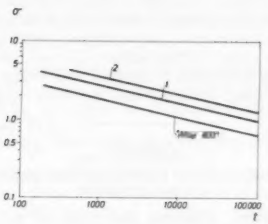
Rolf Harald Söderberg and Clas Erik Helmer, Sandviken, Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Filed Dec. 8, 1972, Ser. No. 313,322

Claims priority, application Sweden, Dec. 21, 1971, 16,378/71

Int. Cl. C22c *37/10, 39/02*

U.S. Cl. 75—124 **9 Claims**



A stainless steel adapted for use at high temperatures contains from up to 4% by weight of tungsten, together with titanium and aluminum.

3,826,650

EPOXY PHOTOPOLYMER DUPLICATING STENCIL

Sheldon I. Schlesinger, Hightstown, N.J., assignor to American Can Company, Greenwich, Conn.

Continuation-in-part of application Ser. No. 753,869, Aug. 20, 1968, now Patent No. 3,708,296, dated Jan. 2, 1973. This application Aug. 25, 1972, Ser. No. 283,629

The portion of the term of the patent subsequent to Jan. 2, 1990, has been disclaimed

Int. Cl. G03c *1/70*

U.S. Cl. 96—35.1 **19 Claims**

A stencil is prepared from a support such as paper, silk or nylon, metal or metal coated material which is coated with an epoxy-diazonium composition, the surface of the material is exposed to an energy source, preferably actinic radiation, in an image wise manner to effect polymerization of said composition and unpolymerized composition is removed, preferably by washing with a solvent.

3,826,651

LAMINATED ALUMINUM ARTICLE AND METHOD

Charles H. Weber III, Silver Spring, and John E. Pickard, Ellicott City, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Original application May 13, 1971, Ser. No. 143,174. Divided and this application Apr. 23, 1973, Ser. No. 353,815

Int. Cl. G03c *1/94, 5/00*

U.S. Cl. 96—35.1 **11 Claims**

The present invention is directed to a composite laminated article useful as a base plate for supporting a layer of liquid photocurable composition from which articles such as polymeric printing plates may be formed. The article is necessarily adapted to have a gold color and includes a sheet of aluminum-containing metal, an inorganic conversion coating over the sheet, and a coating of a specific vinyl resin over the conversion coat.

3,826,652

PROCESS FOR DEVELOPING RADIATION-SENSITIVE ELEMENTS

Vernon L. Bissonette, Brockport, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 189,289, Oct. 14, 1971. This application Dec. 4, 1972, Ser. No. 312,169

Int. Cl. G03c *1/58, 5/22, 5/24, 5/32, 5/34, 7/00*
U.S. Cl. 96—48 PD 28 Claims

Photographic dye images can be produced by physical development of imagewise exposed elements containing a radiation-sensitive metal compound to form an imagewise distribution of catalyst. The resultant catalyst image is then treated in the presence of a color developer and a color coupler with an amplifier solution containing a cobalt(III) complex having a coordination number of six, wherein said treatment is accomplished under conditions which reduce cobalt(III) to cobalt(II) and, in turn, oxidize the color developer to thereby form image dye from the oxidized color developer and the color coupler.

3,826,653

PHOTOGRAPHIC DEVELOPING SYSTEM AND METHOD

John H. Jacobs, Altadena, and Richard A. Corrigan, Temple City, Calif., and Joseph Gaynor, Cleveland, Ohio, assignors to Bell & Howell Company, Chicago, Ill.

Filed Sept. 18, 1972, Ser. No. 290,204

Int. Cl. C03c *5/26, 5/24, 1/48*
U.S. Cl. 96—50 R 13 Claims

An improved developing system for dry or essentially dry photographic processing comprises a pellicle containing photographic developer and a web containing activator for the developer. The system may also include nucleating materials and complexing agents for positive print production. The system is particularly suitable for silver halide microfilm processing and the like. In one embodiment the pellicle is laminated with the web and the combination laminated to a photographic emulsion bearing a latent image to transfer activator and developer to the emulsion. Following development and delamination, the pellicle remains with the web. In another embodiment, the pellicle is temporarily laminated with the web to imbibe developer into the web whereupon the pellicle is removed and the web laminated with the photographic emulsion, as above. Nucleating and complexing agents can be included, to remain with the web, to provide a positive print by diffusion transfer or to aid in stabilization of the photographic emulsion.

3,826,654

DEVELOPER FOR SURFACE- AND INTERNAL-IMAGE SILVER HALIDE PHOTOGRAPHIC MATERIALS

George Raymond Weiss and John Oliver Helling, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed June 1, 1971, Ser. No. 148,771

Int. Cl. G03c *5/30*
U.S. Cl. 96—66 HD 16 Claims

A novel developing solution comprising a 3-pyrazolidone, an ascorbic acid, a thione or thiol substituted nitrogen-containing heterocyclic compound and an alkali metal iodide is an excellent developer composition for internal-and/or surface-sensitive silver halide photographic materials.

3,826,655

PHOTOGRAPHIC FILM HANDLING IMPROVEMENT

Robert J. Borel, Webster, James C. Foote, Jr., York, and Horace G. Warren, Hilton, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed July 10, 1972, Ser. No. 270,407

Int. Cl. G03c *1/48*
U.S. Cl. 96—76 R 9 Claims

A self-processing film unit is provided with improved means for facilitating its handling in a processing camera and for permitting its use with simplified camera mechanisms. The film unit includes a first part, such as processing materials, and a second part, such as an image-recording section, that are releasably coupled together. Processing is initiated by endwise movement of the film unit between a pair of pressure-applying members and the first and second parts then are separated by diverting the first part into an arcuate path extending partially around one of the pressure-applying members while permitting movement of the second part in a straight line path extending beyond the pressure-applying members. The leading end of the first part is provided with a diverter, such as a transverse bar, that is profiled to divert it rearwardly around the one member and into engagement with appropriate guide means, without requiring that any part of the film unit be wider than the second or image-recording part.

3,826,656

FOGGED, DIRECT-POSITIVE SILVER HALIDE EMULSION SENSITIZED WITH A CYANINE DYE CONTAINING HETEROCYLIC NITROGEN ATOM SUBSTITUTED WITH AN —OR GROUP

Philip W. Jenkins, Donald W. Heseltine, and John D. Mee, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Application Jan. 13, 1971, Ser. No. 106,231, now Patent No. 3,770,451, which is a division of application Ser. No. 766,307, Oct. 9, 1968, now Patent No. 3,615,432. Divided and this application Apr. 2, 1973, Ser. No. 347,290

Int. Cl. G03c *1/36, 1/28, 1/40*
U.S. Cl. 96—100 16 Claims

A class of energy-sensitive compounds containing heterocyclic nitrogen atoms substituted with an —OR group fragment under the influence of various forms of energy to form a dye base, a proton and an aldehyde, these materials being useful in image reproduction.

3,826,657

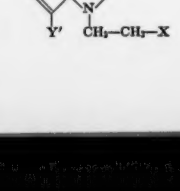
SURFACE-COATING COMPOSITIONS THAT CONTAIN N¹-(SUBSTITUTED ETHYL)INDAZOLES

Pasquale P. Minieri, Woodside, N.Y., assignor to Tenneco Chemicals, Inc.

No Drawing. Application Feb. 7, 1972, Ser. No. 224,294, which is a continuation-in-part of applications Ser. No. 689,812, Dec. 12, 1967, now Patent No. 3,641,050, and Ser. No. 141,999, May 10 1971, now Patent No. 3,741,979. Divided and this application Apr. 20, 1973, Ser. No. 353,078

Int. Cl. C09d *5/14*
U.S. Cl. 106—17 11 Claims

Compounds that have the structural formula



wherein X represents halogen, —SCN, —OR, or —N=R'; Y and Y' each represents hydrogen, halogen, lower alkyl, nitro, amino, acoylamino, aroylamino, (halobenzylidene) amino, or —N=R'; Z represents hydrogen, halogen, acoylamino, or —N=R'; R represents hydrogen, alkyl having 1 to 12 carbon atoms, haloalkyl having 1 to 4 carbon atoms, phenyl, or substituted phenyl wherein the substituent is halogen, hydroxyl, alkyl, or nitro; and R' represents an alkylene group having 1 to 8 carbon atoms, are used to protect surface-coating compositions from deterioration resulting from attack by bacteria and fungi. Illustrative of these N^1-(substituted ethyl)indazoles is N^1-(2-hydroxyethyl)-5-nitro-indazole.

3,826,658

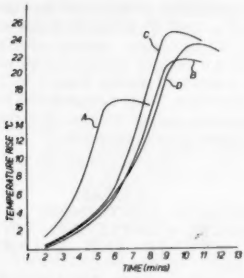
FOUNDRY MOULDING MATERIALS

Kenneth Ernest Lewis Nicholas, Birmingham, England, assignor to British Cast Iron Research Associates, Birmingham, England

Continuation-in-part of abandoned application Ser. No. 221,440, Jan. 27, 1972, which is a continuation of abandonded application Ser. No. 38,694, May 19, 1970. This application Mar. 26, 1973, Ser. No. 344,524

Int. Cl. B28b *7/34*

U.S. Cl. 106—38.3 **5 Claims**



The invention provides pourable foundry moulding compositions comprising refractory filler material, water, a bonding agent and a foaming agent selected from the class of anionic alkyl sulphate foaming agents such that it produces a foam structure in the composition of an inherently limited life ensuring dispersion of the foam shortly after pouring. A first such composition disclosed and claimed comprises 100 parts of refractory filler material, from 1 to 6 parts of water, about 6 parts of sodium silicate solution as bonding agent, and about 0.1 parts of a 2-ethyl hexyl sulphate foaming agent. The composition can be made self-hardening by the addition of a hardening agent such as calcium silicate which reacts exothermically with the sodium silicate solution and evolves a gas. The free escape of the gas from the moulded composition is ensured by arranging that the early dispersion of the foam occurs, and thereby renders the composition highly permeable, before the hardening reaction commences and produces the gas.

3,826,659

HIGH ZIRCONIA CONTAINING GLASS CERAMICS

Terence Stanley Busby and Geoffrey Charles Cox, Sheffield, England, assignors to National Research Development Corporation

No Drawing. Filed May 1, 1972, Ser. No. 253,669

Claims priority, application Great Britain, May 5, 1971, 13,278/71; Nov. 27, 1971, 55,157/71

Int Cl. C03c *3/22, 3/04, 3/12*

U.S. Cl. 106—39.6 **11 Claims**

A glass ceramic material comprising by weight 20% to 45% ZrO_2, 20% to 60% Al_2O_3, 0% to 25% SiO_2, 0% to 30% CaO, 0% to 10% Na_2O, the material including B_2O_3 and/or PbO in the amounts up to 35% and 25% respectively, B_2O_3 in the absence of PbO being in an amount more than 5%, PbO in the absence of B_2O_3 being in an amount more than 2%.

3,826,660

HIGH INDEX OPTICAL GLASS

James Matthew Wylot and Edgar Joseph Greco, Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Sept. 5, 1972, Ser. No. 286,497

Int. Cl. C03c *3/10*

U.S. Cl. 106—53 **2 Claims**

An optical glass having a high index of refraction, high dispersion and low absorption in the visible region of the spectrum produced from melts comprising lead oxide (PbO), silicon dioxide (SiO_2) and sodium chloride (NaCl). Glasses according to this invention may also include components selected from the group consisting of tellurium dioxide (TeO_2) and lithium chloride (LiCl).

3,826,661

HIGH INDEX OPTICAL GLASS

Edgar Joseph Greco and James Matthew Wylot, Rochester, NY., assignors to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Filed Sept. 5, 1972, Ser. No. 286,498

Int. Cl. C03c *3/10*

U.S. Cl. 106—53 **2 Claims**

An optical glass having a high index of refraction and low absorption in the visible region of the spectrum comprising lead oxide (PbO), tellurium dioxide (TeO_2), and at least one material selected from the group consisting of silicon dioxide (SiO_2), germanium dioxide (GeO_2) and boric oxide (B_2O_3). Glasses according to the invention may also include amounts of aluminum oxide (Al_2O_3), arsenic pentoxide (As_2O_5), titanium dioxide (TiO_2), sodium chloride (NaCl), sodium oxide (Na_2O), lithium oxide (Li_2O), lithium chloride (LiCl) and/or potassium fluoride (KF).

3,826,662

REFRACTORY MIX FOR PATCHING THE REFRACTORY LINING IN A BLAST FURNACE CASTING FLOOR NETWORK

Gregory F. Paolini, Perry Hall, Md., assignor to Bethlehem Steel Corporation

No Drawing. Filed Feb. 17, 1972, Ser. No. 229,166

Int. Cl. C04b *35/52*

U.S. Cl. 106—56 **13 Claims**

A trowellable patching mix consisting of about 60% to about 80% coke breeze, about 10% to about 30% fireclay and up to about 20% pitch. The coke breeze is crushed so that 90% of the particles will pass a ⅛ inch screen. The fireclay has a PCE of about 19 to about 24, and the pitch has a softening point between about 300° F. and about 340° F. The mix is blended with water to obtain a desired consistency.

3,826,663

PLASTER ADDITIVE AND PLASTER COMPOSITIONS

Alexander S. Minicozzi and Alexander S. Minicozzi, Jr., Locus Valley, N.Y. (both % Arma Research Corp., 405 Oakwood Road, Huntington Station, N.Y. 11746)

No Drawing. Continuation-in-part of abandoned application Ser. No. 82,156, Oct. 19, 1970. This application Oct. 27, 1972, Ser. No. 301,364

Int. Cl. C04b *7/02, 7/34*

U.S. Cl. 106—90 **37 Claims**

The invention provides a plaster additive comprising component (A) the saponified reaction product of at least one alkali metal carbonate with at least one fatty acid having about 16–18 carbon atoms, about 5.5 to about 8.5 parts by weight of aluminum potassium sulfate and about 25 to about 70 parts silica, the total of said saponified reaction product of said alkali metal car-

bonate and said fatty acid being about equal to the total of said two other noted components; and component (B) comprising at least two materials selected from the group consisting of (i) polyvinyl alcohol, (ii) polyvinyl acetate, and (iii) at least one alkali metal or ammonium salt of lignin sulphonate, each of said components (i), (ii) and/or (iii) when included in component (B) being at least 3% thereof; the ratio of component (A) to component (B) being from about 16:1 to 16:16. It also provides an improved lime plaster composition containing about 75 parts of hydrated lime and between about 1 and 7 parts of said additive. The invention further provides an improved cement plaster composition comprising about 75 parts of portland cement, between 20 and 150 parts of stone, a setting retarder, and between 1 and 7 parts of said additive.

3,826,664

METHOD OF MANUFACTURING HIGH FIRE-PROOF ALUMINOUS CEMENT

Miroslaw Grylicki, Gliwice, Franciszek Nadachowski, Krakow, and Stanislaw Pawlowski, Gliwice, Poland, assignors to Instytut Materialow Ogniotrwalych, Gliwice, Poland

No Drawing. Filed Apr. 27, 1972, Ser. No. 248,140
Claims priority, application Poland, Apr. 28, 1971, P 147,837
Int. Cl. C04b *7/32*
U.S. Cl. 106—104 **6 Claims**

Method of manufacturing a highly fire resistant aluminous cement by sintering raw materials containing CaO, Al_2O_3 and 3 to 50 percent addition of $CaCl_2$, preferably 20 to 35 percent, in the temperature range between 800 and 1500° C., preferably 900 to 1300° C. The addition of $CaCl_2$ markedly lowers the temperatures of formation of calcium aluminates and enables the removal of iron and iron oxide contaminants from the cement, by the formation of volatile $FeCl_3$ and its vaporization during sintering. Instead of $CaCl_2$ other chlorides can be used, for example, $MgCl_2$, NaCl, KCl, $AlCl_3$ and others.

3,826,665

SETTING AND HARDENING OF ALUMINOUS CEMENT

Christian Hovasse, Decines, and Pierre Allemand, Lyon, France, assignors to Rhone-Progil, Decines, France

No Drawing. Filed Mar. 6, 1973, Ser. No. 338,427
Claims priority, application France, Mar. 9, 1972, 7208902
Int. Cl. C04b *7/32*
U.S. Cl. 106—104 **8 Claims**

The inclusion of a composition comprised of (1) lithia or a water-soluble lithium salt and (2) a hydroxylated organic acid, or a salt or ester thereof, accelerates the setting and hardening times of aluminous cement and provides mortars, concretes, grouts, etc., derived from such modified high alumina type cements wherein the superior mechanical and handling properties generally characteristic of aluminous cements are not appreciably affected.

3,826,666

ENTERIC CAPSULES

Michihiro Hirai, Yokohama, and Toyokazu Shimizu Sagamihara, Japan, assignors to Parke, Davis & Company, Detroit, Mich.

No Drawing. Filed July 20, 1972, Ser. No. 273,521
Int. Cl. A61k *9/04;* **C08b** *21/08*
U.S. Cl. 106—128 **5 Claims**

Pharmaceutical capsules having enteric properties are formed from a homogeneous composition comprising gelatin and an alkali metal salt of hydroxypropyl methylcellulose phthalate, optionally with the inclusion of a plasticizer and/or a coloring agent. The capsules are soluble in or disintegrated by the alkaline intestinal secretions but are substantially insoluble or resistant to solution in the acid secretions of the stomach.

3,826,667

MAGNETITE COATING COMPOSITION

Ernest S. Cohen, Silver Spring, Md., and Roland H. Shubert, Reston, Va., assignors to the United States of America as represented by the Secretary of the Interior

No Drawing. Filed Nov. 30, 1972, Ser. No. 310,721
Int. Cl. C08h *9/00, 17/04*
U.S. Cl. 106—259 **7 Claims**

A magnetite coating composition made by reacting an aqueous solution of ferric and ferrous salts with ammonium hydroxide, heating the resulting product to convert it to magnetite, adding a siccative oil to produce a dispersion of magnetite in oil and adding a solvent thinner to produce a coating composition suitable as a paint or a printing ink.

3,826,668

ELECTROLYTIC COPPER RELEASE AGENT

Howard M. Rue, Media, Pa., assignor to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

No Drawing. Filed July 3, 1972, Ser. No. 268,431
Int. Cl. C08h *17/28;* **C09d** *3/00, 3/60*
U.S. Cl. 106—285 **10 Claims**

A release agent composition applied on cathodes prior to the electrolytic deposition of copper comprising from about 60–98 volume percent solvent refined paraffin oil having a viscosity of 50 to 500 SUS at 100° F., 0–55 volume percent paraffinic bright stock having a viscosity of 150–200 SUS at 210° F., 0.5–3.0 volume percent of butyl stearate, 0.15–0.50 volume percent of a pour point depressant, 0.5–3.0 volume percent of an oxygen containing organic compound having from 1 to 2 vicinal epoxy groups per molecule. These compositions permit the stripping of deposited copper without damage to either the deposited copper or to the cathode.

3,826,669

COMPOSITIONS CONTAINING A REACTIVE HYDROXYL-CONTAINING VINYL CHLORIDE POLYMER AND A LIQUID POLYEPOXIDE

George J. Antlfinger, Avon Lake, and Harold E. Von Kamp, Elyria, Ohio, assignors to The B. F. Goodrich Company, New York, N.Y.

No Drawing. Filed Dec. 8, 1972, Ser. No. 313,602
Int. Cl. C08f *15/26, 37/18*
U.S. Cl. 106—287 R **10 Claims**

Solvent resistant films are obtained from compositions containing vinyl chloride, vinylidene chloride, and a hydroxyl-containing monomer copolymerizable therewith, and a liquid polyepoxide, along with small amounts of chromium diisopropyl salicylate and stannic chloride as catalysts.

3,826,670

ENCAPSULATION OF ORGANIC PIGMENTS

Thomas C. Rees, Park Forest, Ill., assignor to The Sherwin-Williams Company, Cleveland, Ohio

No Drawing. Filed Nov. 7, 1972, Ser. No. 302,693
Int. Cl. C08h *17/14*
U.S. Cl. 106—308 Q **17 Claims**

Novel pigments having improved heat and bleed resistance are made by precipitating an ionically-crosslinked linear polymeric acid salt of a polyvalent metal on a solid organic pigment core. The polymer-treated pigment is encapsulated with a hydrated metal oxide, which provides desirable chemical and physical properties for the pigment. The intermediate layer of polymeric salt can be formed *in situ* on the solid organic core by slurrying the pigment core in an aqueous solution of an ionized polycarboxylic acid polymer and precipitating the polymer by ionic crosslinking with a polyvalent metal, e.g. aluminum. The intermediate polymeric metal salt provides excellent adhesion for the subsequent application of hydrated metal oxide, e.g. silica.

3,826,671
METHOD FOR CONTROLLING WATER TRANSPIRATION IN PLANTS

Richard J Petrucco, Laurel Springs, and John W. Schick, Cherry Hill, N.J., assignors to Mobil Oil Corporation

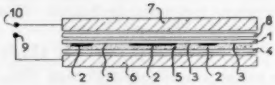
No Drawing. Original application Jan. 27, 1971, Ser. No. 110,259, now abandoned. Divided and this application Dec. 7, 1972, Ser. No. 313,020
Int. Cl. A01n *5/00*; C09d *3/60*
U.S. Cl. 117—3 10 Claims

Water transpiration in plants, without substantially interfering with the exchange of gases essential for photosynthesis, is controlled by application to the plant surface of an emulsion composition comprising a polymer, an emulsifier, wax, petrolatum and water.

3,826,672
NON-ELECTROSTATIC METHOD FOR PRODUCING ELECTROGRAPHIC IMAGE

Marcus Cantarano, 47 Av. F. Roosevelt, Bat-B, Thiais (94), France

Continuation-in-part of abandoned application Ser. No. 631,792, Apr. 18, 1967. This application June 9, 1971, Ser. No. 151,488
Claims priority, application France, Apr. 21, 1966, 58,525
The portion of the term of the patent subsequent to Dec. 4, 1990, has been disclaimed
Int. Cl. G03g *17/00*
U.S. Cl. 117—17.5 11 Claims



A method for producing an electrographic image from an original provided with a conductivity pattern ranging from a portion having a greater conductivity to a portion having a lesser conductivity, comprising the steps of placing a thin layer of electrically chargeable particles in electrical contact with said conductivity pattern, disposing said original and said layer of electrically chargeable particles between a first and second electrode so that said original is interposed between said layer of electrically chargeable particles and said second electrode and generating an alternating electric field between said first and second electrodes of sufficient strength so as to charge said electrically chargeable particles whereby said particles receive electric charges having different maximum values according to the different conductivities of said portions of said conductivity pattern whereby the said electrically charged particles are attracted toward and away from said original whereby a portion of said electrically charged particles are removed and the remainder of said particles form an electrographic image on said original.

3,826,673
COATING PROCESS

Robert E. Batson, Newington, and Andrew G. Bachmann, Weatogue, Conn., assignors to Loctite Corporation, Newington, Conn.

No Drawing. Filed Feb. 14, 1972, Ser. No. 226,313
Int. Cl. B44d *1/44*
U.S. Cl. 117—62.2 15 Claims

A process is presented for applying coatings to cylindrical objects, such as threaded fasteners, which involves a post-coating treatment with a congealing agent to increase the resistance of the coating to abrasion and damage during the period following the coating steps, but before the coating composition has dried to a significant extent.

3,826,674
HYDROPHILIC FOAM

E. C. A. Schwarz, Neenah, Wis., assignor to Kimberly-Clark Corporation, Neenah, Wis.

No Drawing. Continuation-in-part of abandoned application Ser. No. 19,102, Mar. 12, 1970. This application Apr. 28, 1972, Ser. No. 248,491
Int. Cl. B44d *5/12*; C08g *22/44*
U.S. Cl. 117—62.2 9 Claims

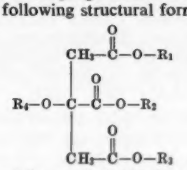
Polyurethane foams are rendered hydrophilic by coating an anhydride containing polymer onto the foam and thereafter reacting at least a portion of the anhydride groups with ammonia or a primary or secondary amine. The permanence of the foam's hydrophilic character can be enhanced by crosslinking the anhydride coated foam with a polyfunctional amine.

3,826,675
LUBRICATED METALLIC CONTAINER STOCKS AND METHOD OF PREPARING THE SAME AND APPLYING AN ORGANIC COATING THERETO

John R. Smith, Richmond, and James A. Bray, Saline-ville, Ohio, assignors to National Steel Corporation

No Drawing. Filed Mar. 10, 1972, Ser. No. 233,748
Int. Cl. B44d *1/16*
U.S. Cl. 117—75 40 Claims

Metallic container stocks are lubricated with citric acid esters. The improved lubricated container stocks of the invention are characterized by excellent wettability and adhesion of organic coatings in general and especially epoxy resin coating compositions. The citric acid ester lubricants are pharmacologically safe and are easily applied at low cost by electrostatic deposition and other methods presently used for applying prior art lubricating agents. The method of the invention is especially useful in lubricating tinplate strip, blackplate strip, blackplate strip having a chromium - containing coating thereon, and aluminum strip of container stock gauge with citric acid ester lubricants having the following structural formula:



wherein R_1, R_2 and R_3 are individually selected from the group consisting of hydrogen and alcoholic residual containing 1–18 carbon atoms, R_4 is selected from the group consisting of hydrogen and caboxylic acid radicals containing 1–18 carbon atoms, and at least one of R_1, R_2 and R_3 is an alcoholic residue. The invention further provides a novel method of applying an organic coating on lubricated metallic container stocks.

3,826,676
WATER VAPOR IMPERMEABLE SAUSAGE CASING MATERIAL

Wilhelm Heling, Bensheim-Auerbach, and Harald Hordt, Weinheim-Bergstrasse, am Drachenstein, Germany, assignors to Firma Carl Freudenberg, Weinheim-Bergstrasse, Germany

No Drawing. Filed Jan. 31, 1972, Ser. No. 222,308
Claims priority, application Germany, Feb. 8, 1971, P 21 05 715.8
Int. Cl. A22c *13/00*
U.S. Cl. 117—76 T 10 Claims

A sausage casing material comprising an elastically prebonded fibrous skeleton, the pores of which are coated with a non-water-soluble, swellable and shrinkable filler and which is coated with a polyvinylidene chloride foil having a thickness between 10 and 20 microns; the method of preparing such sausage casing material which comprises forming an elastically prebonded fibrous skeleton, containing polyvinyl alcohol fibers, impregnating the same with a non-water-soluble, swellable and shrinkable

filler material and coating the same with a polyvinylidene chloride foil having a thickness between 10 and 20 microns.

3,826,677

POLY-1-BUTENE COATED RELEASE PAPER

Alfred Michels and Kurt Fleischer, Marl, Germany, assignors to Chemische Werke Huls Aktiengesellschaft, Marl, Germany

No Drawing. Filed Feb. 25, 1972, Ser. No. 229,510

Claims priority, application Germany, Mar. 12, 1971, P 21 11 884.3

Int. Cl. C08f *3/12*; D21h *1/10*

U.S. Cl. 117—76 P 8 Claims

A release coating, particularly for paper products, applied from a hot melt of predominantly isotactic poly-1-butene or copolymers of poly-1-butene having an average molecular weight of 700,000 to 2,000,000 and a melting range of about 120 to 130° C.

3,826,678

METHOD FOR PREPARATION OF BIOCOMPATIBLE AND BIOFUNCTIONAL MATERIALS AND PRODUCT THEREOF

Allan S Hoffman and Gotfried Schmer, Seattle, Wash., assignors to the United States of America as represented by the United States Atomic Energy Commission

No Drawing. Filed June 6, 1972, Ser. No. 260,237

Int. Cl. A61k *17/18, 23/02*

U.S. Cl. 117—81 14 Claims

A method for the preparation of biocompatible and biofunctional surfaces is provided comprising radiation grafting a reactable compound selected from the group consisting of polymers and copolymers onto an inert polymeric substrate and thereafter chemically bonding a biologically active molecule to the reactable compound. Specific embodiments include chemically bonding of human serum albumin, heparin, streptokinase, prostaglandin E-1 and mixtures thereof to hydrogels of varying compositions with or without an intermediate smaller molecule or chemical "arm," such as ε-amino caproic acid or 1,4 diamino butane, the hydrogels having been previously radiation-grafted to tough inert polymeric substrate.

A highly synergistic effect is achieved for hydrogels containing high water contents, e.g., above about 55%, when the chemically bonding of the biologically active molecules is carried out via an intermediate smaller molecule or chemical arm.

For thin film substrates having radiation-grafted thereto hydrogels with $—CO_2H$ pendant functional groups which are activated with a carbodiimide solution, a quick wash of the thin film with ice water is required to effect subsequent chemical bonding of the biologically active molecules to the activated surface. The same technique is also required where a chemical arm is employed which has $—CO_2H$ pendant functional groups.

3,826,679

METHOD FOR MAKING ELECTRON ENERGY SENSITIVE PHOSPHORS FOR MULTI-COLOR CATHODE RAY TUBES

Jack D. Kingsley and Jerome S. Prener, Schenectady, N.Y., assignors to General Electric Company

No Drawing. Application Sept. 27, 1971, Ser. No. 184,292, now Patent No. 3,767,459, which is a division of application Ser. No. 843,401, July 22, 1969, now Patent No. 3,664,862. Divided and this application Mar. 22, 1973, Ser. No. 343,637

Int. Cl. B44d *5/00*; C09k *1/12*

U.S. Cl. 117—100 B 4 Claims

A method for preparing europium activated yttrium oxide phosphor particles having a mon-luninescent core and a luminescent outer region including forming crystals of yttrium hydroxide having a thin outer region of europium-yttrium hydroxide and firing the crystals to produce the resultant particles.

3,826,680

METHOD FOR PREPARING POLYMER IMPREGNATED CEMENT ARTICLES

Arturo Rio, Marcello Cerrone, and Alberto Saini, Colleferro, Italy, assignors to Società Italiana per Azioni per la Produzione di Calci e Cementi di Segni, Rome, Italy

No Drawing. Filed Jan. 25, 1972, Ser. No. 220,690

Claims priority, application Italy, Jan. 27, 1971, 47,996/71

Int. Cl. B32b *13/12*; B44d *1/44*

U.S. Cl. 117—119.6 1 Claim

A method for preparing polymer impregnated cement articles wherein a pre-formed cement article is impregnated with a liquid polymerizable composition, then immersed in water, heated at a temperature required for the polymerization of said polymerizable composition maintaining the impregnated cement article at such a temperature until polymerization in situ of the monomer has been completed.

3,826,681

METHOD FOR PROTECTING A HOT ROLLED FERROUS PRODUCT

Michel Vialle, Thionville, and Michel Turpin, Bourg-la-Reine, France, assignors to Societe Wendell-Sidelor, Societe Anonyme, Hayange, France

Filed Feb. 4, 1971, Ser. No. 112,594

Claims priority, application France, Feb. 9, 1970, 7004451

Int. Cl. C23c *11/06*

U.S. Cl. 117—135.1 10 Claims

A method for de-scaling a hot-rolled ferrous product, together with the de-scaled protected ferrous product produced thereby, characterized by the formation on the ferrous product as it leaves the rolling mill of a protective iron-silicon surface layer. More particularly, the ferrous product, as it leaves the rolling mill at a temperature of from between 800° C. to 1200° C., is sprayed with a de-scaling material comprising a chlorinated compound of silicon, and preferably a chlorinated derivative of silane.

3,826,682

FABRIC CONDITIONING

Marvin Liebowitz, Edison, and Neil M. McHugh, Bridgewater, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Nov. 1, 1971, Ser. No. 194,549

Int. Cl. D06m *13/38, 13/40*

U.S. Cl. 117—139.5 CQ 6 Claims

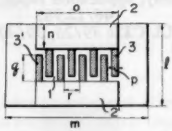
Stable foam fabric conditioning agents, preferably fabric softeners which also have antistatic activity, are made by dispensing a pressurized composition of fabric conditioning agent to the atmosphere, after which the foam is tumbled with fabrics in an automatic laundry dryer or similar machine while they are in a damp state, with hot drying air being circulated through the dryer. The most useful softening compositions for these products include higher fatty acyl amidopropyl di-lower alkyl glycines and higher fatty alkyl di-lower alkyl glycines. Preferably, these are formulated with water and a plasticizer or solvent such as glycerol, and are pressurized with a mixture of liquefied gases, such as those of the Freon or lower hydrocarbon type.

3,826,683

METHOD OF PRODUCING A PHOTOCONDUCTIVE CELL

Kazuhiko Ihaya, Tokyo, Japan, assignor to Canon Camera Kabushiki Kaisha, Tokyo, Japan

Original application Feb. 21, 1968, Ser. No. 707,263, now Patent No. 3,594,683, dated July 20, 1971. Divided and this application Aug. 10, 1970, Ser. No. 62,608
Claims priority, application Japan, Feb. 27, 1967, 42/12,442; Mar. 9, 1967, 42/14,902; May 31, 1967, 42/34,711
Int. Cl. B44d *1/18*; C23c *13/04, 15/00*
U.S. Cl. 117—212 3 Claims



This invention provides a photoconductive cell and means for producing the same for use in photometry having the specific property that current flowing through the cell is substantially proportional to the logarithm of the intensity of illumination of luminous flux. The electrodes of the cell have a resistance value corresponding to the intermediate value of specific resistance which the photoconductive body exhibits between the upper and lower limits within the photometric range. The electrodes of the cell have no rectifying property or only a little rectifying property between the electrodes and the photoconductive body, and that when it is difficult to obtain the desired specific resistance from a production point of view or by any other reason, material of the electrodes may be selected from one or more kinds of materials whose work function is the same or similar to that of the photoconductive body.

3,826,684

NICKEL ELECTRODE CELL WITH IMPROVED HIGH TEMPERATURE CHARGE ACCEPTANCE

Saverio F. Pensabene, Gainesville, Fla., assignor to General Electric Company

Continuation-in-part of abandoned application Ser. No. 762,092, Sept. 24, 1968. This application Jan. 4, 1971, Ser. No. 74,818
Int. Cl. H01m *43/04*
U.S. Cl. 136—28 2 Claims

Hydroxides of zinc, mercury of Group IIA metals are added adjacent the surfaces of a rechargeable positive nickel electrode containing nickel hydroxide as the active rechargeable material in the discharged state. The hydroxide additive improves the charge acceptance and energy storage capacity of cells with nickel electrodes charged at a temperature above 77° F.

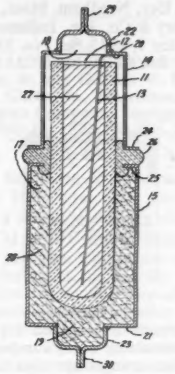
3,826,685

SEALED PRIMARY SODIUM-HALOGEN BATTERY

Robert R. Dubin, Schenectady, William L. Mowrey, Burnt Hills, and William A. Gilhooley, Schenectady, N.Y., assignors to General Electric Company

Filed Mar. 31, 1972, Ser. No. 239,890
Int. Cl. H01n *23/00*
U.S. Cl. 136—83 R 2 Claims

A wall-sealed battery casing and a sealed primary sodium-halogen battery are disclosed wherein the casing includes an open ended inner vessel of a solid crystalline ion-conductive material, an electronic conductor within the interior of the inner vessel, two outer opposed open ended metallic portions each with an additional opening surrounding the inner vessel, the two opposed vessel portions sealed together and to the outer wall of the inner vessel, and a fill tube associated with the respective additional opening in each outer vessel portion. A sealed primary sodium-halogen battery has the above type of wall-sealed casing with a solid sodium containing ion-conductive inner vessel, a sodium anode and a cathode of a halogen in conductive material. The anode and cathode are positioned, respectively, in either the inner vessel or between the inner vessel and the outer vessel portion adjacent the closed end of the inner vessel.

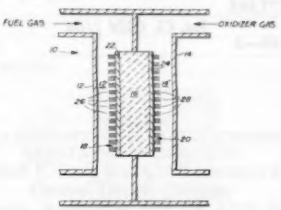


3,826,686

ELECTROCHEMICAL ELECTRODES

Sheldon L. Epstein, Wilmette, Ill., and Bernard W. Wessling, Winthrop, Mass., assignors to Brunswick Corporation, Chicago, Ill.

Original application July 24, 1969, Ser. No. 845,945, now Patent No. 3,660,888, dated May 9, 1972. Divided and this application July 6, 1971, Ser. No. 160,169
Int. Cl. H01m *13/06*
U.S. Cl. 136—120 FC 7 Claims

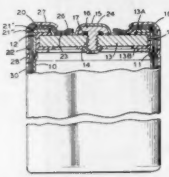


The specification describes a molten carbonate fuel cell electric energy source incorporating a novel pair of electrodes comprising a pair of permeable thin metallic films painted on a magnesia electrolyte matrix and a plurality of fiber metal wicks flocked onto the films. During operation, the molten carbonate electrolyte permeates the wicks, which extend into the gas manifolds, to provide very large surface areas for 3-phase fuel cell reactions covered by thin films of electrolyte supplied by large reservoirs in the wicks to minimize cell overvoltage.

In addition to the preferred embodiment, a process for fabricating fuel cells and electrochemical electrodes is

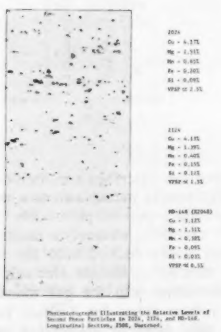
described. Also, applications to other types of fuel cells, batteries and electrochemical systems are described.

3,826,687
SEALS OF THE Li/SO_2 ORGANIC ELECTROLYTE CELLS
Arabinda N. Dey, Needham, Mass., assignor to P. R. Mallory & Co., Inc., Indianapolis, Ind.
Filed May 7, 1973, Ser. No. 358,214
Int. Cl. H01m *1/02*
U.S. Cl. 136—133 **8 Claims**



A seal arrangement is provided for electrochemical cells commonly containing a gas component dissolved in the electrolyte. The arrangement also acts as a terminal and provides a gas-impermeable closure for the cell container while providing electrically conductive surfaces so that portions of said seal arrangement may serve as a terminal for the cell. A gas-impermeable seal element of the arrangement is a polymer film coated on both sides of an aluminum foil and bonded to said aluminum. The polymeric film provides a measure of gas-impermeability and provides heat-sealable surfaces and the aluminum foil provides strength and gas-impermeability. The arrangement provides for the positioning of the foil-polymer composite around the metallic upper portion of the cell assembly in a manner that the metallic elements may be heat sealed thereto including the container of the cell and a heat shrinkable overlaying sleeve.

3,826,688
ALUMINUM ALLOY SYSTEM
Sander A. Levy, Richmond, Va., assignor to Reynolds Metals Company, Richmond, Va.
Continuation-in-part of application Ser. No. 105,061, Jan. 8, 1971. This application Aug. 3, 1972, Ser. No. 277,605
Int. Cl. C22f *1/04*
U.S. Cl. 148—2 **29 Claims**



Wrought articles of Al-Cu-Mg alloy containing up to about 5% copper and up to about 2% magnesium as the principal alloying elements by weight, within limits effective to achieve substantially single phase structure, and exhibiting improved fracture toughness in —T8XX condition; also, related practices and improved alloy compositions for making such articles, including plate.

3,826,689
AUSTENITE TYPE HEAT-RESISTING STEEL HAVING HIGH STRENGTH AT AN ELEVATED TEMPERATURE AND THE PROCESS FOR PRODUCING SAME
Sadao, Ohta and Yasuo Watase, Kobe, Japan, assignors to Kobe Steel Ltd., Fukini-ku, Kobe, Japan
Filed Mar. 9, 1972, Ser. No. 233,255
Claims priority, application Japan, Mar. 9, 1971, 46/12,983
Int. Cl. C22c *39/26, 39/40, 41/02*
U.S. Cl. 148—3 **5 Claims**

An austenite type heat-resistant steel, containing in weight percent from 0.1 to 1% carbon, from 0.01 to 3% silicon, from 0.01 to 10% manganese, from 13 to 35% chromium, from 15 to 50% nickel, and the balance essentially impurities and iron, or additionally other elements such as Co, W, Mo, Nb, Ti, Al and/or N, which is characterized by high strength at elevated temperatures, and which is adaptable to forming by forging or centrifugal casting processes, is provided herein.

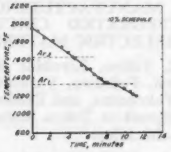
3,826,690
METHOD OF PROCESSING ALUMINUM ELECTRICAL CONDUCTORS
Warren Edward Bleinberger, Towson, Edward Louis Franke, Jr., Perry Hall, John Vernon Galloway, Timonium, George William Richardson, Glen Burnie, and Albert Richard Thomas, Baltimore, Md., and Palmer Doyle Thomas, Tucker, Ga., assignors to Western Electric Company, Incorporated, New York, N.Y.
Continuation of abandoned application Ser. No. 118,677, Feb. 25, 1971. This application Oct. 22, 1971, Ser. No. 191,628
Int. Cl. C21d *1/26, 1/40, 7/00*
U.S. Cl. 148—11.5 A **10 Claims**

Aluminum or aluminum alloy wire having a relatively high percentage of elongation and a relatively high fatigue resistance in addition to substantially high yield and tensile strengths is manufactured by a contnuous automatically controlled process involving the steps of cold working the wire by initially drawing the wire to a diameter near the final diameter and cleaning the wire in a solvent. Then the wire is strand annealed with a low frequency induction annealer with provisions for regulating the annealing temperature to precisely control the annealing by compensating for disturbing factors such as changes in line speed after which the wire is drawn in a specially controlled environment while controlling automatically the strand annealing and the heat loss between the strand annealing and the specially controlled environment to maintain the temperature of the wire being advanced into the specially controlled environment above the strain recrystallization temperature of the wire material. Then the wire is recleaned in a solvent after which insulation is extruded onto the wire, and stresses in the wire are distributed by reverse bending of the wire.

3,826,691
ROLLED FERRITE-PEARLITE ALLOY PLATE AND METHOD OF PROCESSING SAME

George F. Melloy, Bruce L. Bramfitt, and Arnold R. Marder, Bethlehem, Pa., assignors to Bethlehem Steel Corporation

Filed Feb. 5, 1973, Ser. No. 329,473
Int. Cl. C21d 7/14; C22c 39/00
U.S. Cl. 148—12 6 Claims



This invention relates to a ferrous alloy and a method for improving the strength and notch toughness of a ferrous alloy containing by weight up to about 0.35% carbon, a total up to about 3% of other elements, balance iron. More particularly, said invention is predicated on the discovery that by controlling the reduction aspects of the continuous thermal mechanical treatment schedule through the austenite, austenite-ferrite, and ferrite regions, a highly textured ferrous alloy results having improved properties.

3,826,692
PROCESS OF MANUFACTURING HEAT RESISTING STEEL SHEET FOR DEEP DRAWING

Kazuhisa Kinoshita and Tetsuo Yamaguchi, both % Gijutsu Kenkyusho, Nippon Kokan Kabushiki Kaisha, 2730 Minamiwataridacho, Kawasaki-shi, Kanagawaken, Japan

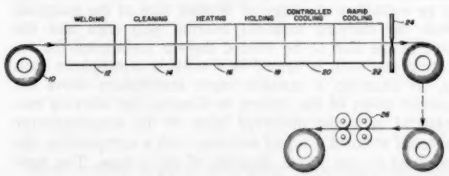
No Drawing. Continuation-in-part of abandoned application Ser. No. 79,685, Oct. 9, 1970. This application Dec. 29, 1972, Ser. No. 332,582
Claims priority, application Japan, Oct. 13, 1969, 44/81,399
Int. Cl. C21d 9/48; C22c 39/02, 39/14
U.S. Cl. 148—12 2 Claims

A method for manufacturing steel sheet having good cold formability comprising hot rolling steel which contains less than 0.10% C (less than 0.15% annealing for decarburization), less than 0.15% Si, less than 0.25% Mn, 0.4% to 1.5% Cr, less than 0.8% Mo, less than 0.5% Al and unavoidable impurities, cold rolling at a reduction rate of more than 30% and annealing for recrystallization at a temperature above 700° C.

3,826,693
ATMOSPHERE CONTROLLED ANNEALING PROCESS

Thomas W. Fisher, Bethlehem, Pa., assignor to Bethlehem Steel Corp.

Filed Jan. 29, 1973, Ser. No. 327,537
Int. Cl. C21d 1/76
U.S. Cl. 148—12.1 4 Claims



A method of controlling the surface appearance of continuous annealed and temper rolled steel strip suitable for use in the manufacture of metallic coated steel strip, such as tin plate. The bright and uniform appearance of the strip is achieved by providing a protective atmosphere containing a maximum of about 1.5% hydrogen during the controlled cooling down to about 1000° F., and a maximum of about 0.5% hydrogen during the rapid cooling down to below about 250° F.

3,826,694
THERMAL TREATMENT OF STEEL

John E. Woodilla, Jr. and Gordon W. Hunt, Torrington, and Willard B. Green, Jr., Harwinton, Conn., assignors to The Torrington Company, Torrington, Conn.

Filed May 18, 1972, Ser. No. 254,454
Int. Cl. C21d 1/46
U.S. Cl. 148—15 2 Claims

A method of hardening hypereutectoid steels having less than about 10% total alloy content is described which results in a structure with an ultra-fine grain size (finer than ASTM #10) and a natural dispersion of very small excess carbides. The process includes high temperature solid solution of the carbide phase present in the material, controlled cooling through a selected area of the time-temperature-transformation for the material to form pearlite, (a ferrite and carbide lamellar structure) and cementite reheating to austenitize the material, and finally, quenching to produce a structure with an ultrafine grain and a natural dispersion of very small excess carbides that results in an improvement of fatigue life and an increase in compressive yield strength.

3,826,695
FOAMED MOLTEN WELDING POWDERS WITH LOW BULK DENSITY

Wolfgang Leicher and Anton More, Burghausen, Germany, assignors to Wacker-Chemie GmbH, Munich, Germany

No Drawing. Filed Feb. 1, 1973, Ser. No. 328,821
Claims priority, application Germany, Feb. 9, 1972, P 22 06 156.9
Int. Cl. B23k 35/34
U.S. Cl. 148—26 3 Claims

A foamed molten welding powder with low bulk density to be used for submerged arc welding, advantageously for pore-free plating, said powder having the following chemical analysis:

	Percent by weight
SiO_2	37–46.5
Al_2O_3	4–18
CaO	5–13
MgO	18–35
Na_2O+K_2O	3–6.5
Combined fluorine	3–6.5

3,826,696
RARE EARTH INTERMETALLIC COMPOUNDS CONTAINING CALCIUM

Robert E. Cech, Scotia, N.Y., assignor to General Electric Company

No Drawing. Application Aug. 16, 1971, Ser. No. 172,290, now Patent No. 3,748,193, which is a continuation-in-part of abandoned application Ser. No. 849,875, Aug. 13, 1969. Divided and this application Dec. 18, 1972, Ser. No. 315,813
Int. Cl. H01f 1/04
U.S. Cl. 148—31.57 1 Claim

A reduction-diffusion process for producing novel rare earth intermetallic compounds, for example, cobalt-rare earth intermetallic compounds, especially compounds useful in preparing permanent magnets. A particulate mixture of rare earth metal oxide, cobalt and calcium hydride is heated to effect reduction of the rare earth metal oxide and to diffuse the resulting rare earth metal into the cobalt to form the intermetallic compound.

3,826,697

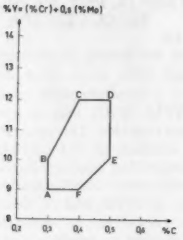
CORROSION RESISTANT EDGE TOOLS SUCH AS RAZOR BLADES

Jan-Christer Henric Ovesson Carlen and Claes Bertil Bergqvist, Sandviken, Sweden, assignors to Sandvikens Jernverks Aktiebolag, Sandviken, Sweden

Continuation of abandoned application Ser. No. 42,050, June 1, 1970. This application Oct. 17, 1972, Ser. No. 298,241

Int. Cl. C22c *39/14*

U.S. Cl. 148—37 3 Claims



Steels suitable for making corrosion-resistant edged tools (e.g., razor blades) contain chromium and carbon, and may contain silicon, manganese, molybdenum, tungsten, copper, cobalt, nickel, niobium, tantalum, titanium, vanadium, zirconium, boron or beryllium. The ratio of chromium to carbon is less than 30:1; the carbon content is 0.3–0.5 wt. percent; and the chromium content is 9.0–10.8 wt. percent. A tool formed from a steel of this class has a hardness exceeding VPN 800 in the hardened condition, and a hardness after tempering up to 400° C. within the range VPN 650–800.

3,826,698

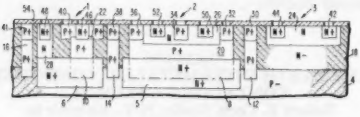
PROCESS FOR FORMING A PEDESTAL BASE TRANSISTOR

Igor Antipov, Pleasant Valley, and Paul Albin Melzer, Newburgh, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 28, 1972, Ser. No. 284,381

Int. Cl. H01l *7/44*

U.S. Cl. 148—191 9 Claims



A process for forming a pedestal base transistor in which a buried layer of a first conductivity type is diffused into a substrate of a second conductivity type. Impurities of the second conductivity type, which have a higher diffusion rate than the dopant which forms the buried layer, are diffused into a limited area of the buried layer. An epitaxial layer is then formed on the surface of the semiconductor. During the growth of the epitaxial layer, the previously diffused regions outdiffuse into the epitaxial region. The outdiffusion of the second conductivity type, due to its faster diffusing characteristics, approaches the surface of the epitaxial layer more closely than does the buried layer, thereby forming a pedestal region. A second diffusion of the fast diffusing material is made through the surface of the epitaxial layer and contacts the pedestal, thereby resulting in a highly doped pedestal base region. Diffused isolation regions and an emitter region are formed to complete the device in monolithic form.

A method for simultaneously forming a second transistor of the complementary type to the first transistor using the same process steps is also described.

3,826,699

METHOD FOR MANUFACTURING A SEMICONDUCTOR INTEGRATED CIRCUIT ISOLATED THROUGH DIELECTRIC MATERIAL

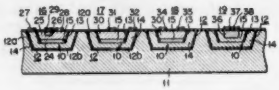
Hajime Sawazaki, Tokyo, Kiyohide Sakai, Yokohama, Hiroshi Tsutsumi, Fujisawa, Yasusuke Sumitomo and Kazuo Niwa, Yokohama, and Eisaku Inaba, Kitakyushu, Japan, assignors to Tokyo Shibaura Electric Co., Ltd., Kawasaki-shi, Japan

Filed May 9, 1973, Ser. No. 358,701

Claims priority, application Japan, May 13, 1972, 47/47,382

Int. Cl. H01l *7/36, 7/50, 19/00*

U.S. Cl. 148—175 6 Claims



A method for manufacturing a semiconductor integrated circuit comprises steps of forming an enclosed groove in the surface of a semiconductor wafer, forming an inner dielectric layer on the surface of the groove, depositing an epitaxial layer on said surface of the wafer and the surface of the dielectric layer, forming an outer dielectric layer on the epitaxial layer, forming a support substrate on the outer dielectric layer, removing the wafer in a predetermined level to form an island region enclosed by the outer dielectric layer and forming a semiconductor element in the island region.

3,826,700

WELDING METHOD FOR FABRICATING LARGE AREA SINGLE CRYSTALS AND THE PRODUCT THEREOF

Ting L. Chu, Dallas, Tex., assignor to Texas Instruments Incorporated and Southern Methodist University, Dallas, Tex.

Filed June 28, 1972, Ser. No. 266,932

Int. Cl. H01l *7/38*

U.S. Cl. 148—177 18 Claims

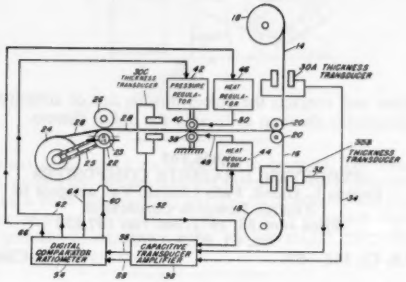
A method of permanently "welding" together slabs of semiconductor materials cut from grown crystals such as, for example, gallium arsenide is disclosed. A thin film of alloying material such as, for example, germanium is formed on one edge of a slab of semiconductor material to be welded to the edge of another slab of the material. With the alloying material bearing slab edge and the edge of the slab to be welded thereto juxtaposed the resulting sandwich is heated in a suitable atmosphere such as, for example, a metallic vapor atmosphere above the eutectic point of the system to dissolve the alloying mamaterial in a thin dissolved layer of the semiconductor material to form a liquid solution with a composition determined by the phase diagram of the system. The temperature of the system is then lowered to room temperature to enable the liquid solution to solidify and grow onto the semiconductor material slabs to form an epitaxial layer welding the two sections together.

3,826,701

CONTROLLABLE HEAT SEALING PROCESS FOR OPTIMUM SEAL STRENGTH

Donald Miller, Rockaway, N.J., assignor to the United States of America as represented by the Secretary of the Army

Filed Oct. 31, 1972, Ser. No. 302,457
Int. Cl. G01b *5/06*
U.S. Cl. 156—64 **4 Claims**



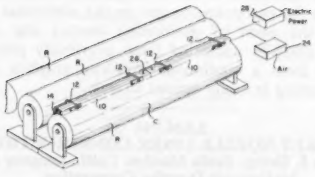
A method for sealing thermoplastic film materials to obtain optimum seal strength is achieved by automatically varying seal making parameters in response to a pre-established seal bead to film thickness ratio for a given seal efficiency. A combination of thickness sensing transducers, amplifier, ratiometer and variable speed motor is used to maintain and control the bead making process within a selected seal efficiency to thickness ratio range. The present process for heat sealing thermoplastic materials controls seal efficiency by non-destructive testing of the seal bead and film material and continuous control of the process.

3,826,702

METHOD OF IN-SITU HEAT SEAL SLEEVING FOR LARGE ROLLS

Harry Samuel Chapman, R.D. 3, Box 328, Hickory Hill, Oxford, Pa. 19363

Continuation-in-part of application Ser. No. 824,411, May 13, 1969, now Patent No. 3,660,210. This application Apr. 21, 1972, Ser. No. 246,268
Int. Cl. B65h *8/00*
U.S. Cl. 156—86 **14 Claims**



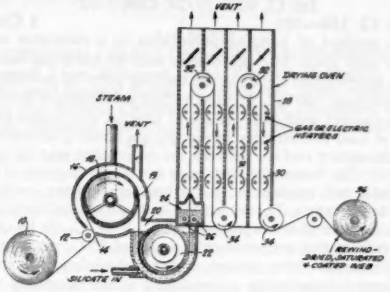
Heat sealing organic polymeric materials, especially fluorocarbon films, to form tubular sleeves about large and elongated rolls prior to heat-shrinking the sleeve snugly about the roll, thereby to effect rapid in-situ roll sleeving.

3,826,703

METHODS OF PRODUCING FIBROUS SILICATE PRODUCTS

William Thornton Russell, Rte. 4, North Manchester, Ind. 46962

Application July 12, 1970, Ser. No. 55,672, now abandoned, which is a continuation-in-part of application Ser. No. 781,200, Dec. 4. 1968, now Patent No. 3,616,194. Divided and this application May 10, 1972, Ser. No. 252,049
Int. Cl. B05c *3/12;* **B31c** *13/00;* **B32b** *13/08*
U.S. Cl. 156—189 **19 Claims**



The subject matter of the following specification involves new products comprising alkali metal silicates and a suitable substrate, especially a fibrous substrate such as a strong, dense paper. A wide variety of products in the form of panels, tubes, both round and multisided, containers, such as boxes and drawers for furniture, desks and the like, or formed by shaping and forming in the manner of laminating, for example, by heat and pressure in a press or a combination of press and mandrel. The stock material for the laminating operation in a preferred example comprises Kraft liner board stock as a sheet material in which the alkali metal silicate is present in the voids of the paper from surface to surface as viewed in cross section; and the paper may be fully saturated with the silicate or a selected quantity may exist in the paper randomly in the voids and through the paper as results from the manner of effecting the silicating of the paper stock. The silicated paper stock is produced extremely rapidly by techniques which cause the silicate to penetrate the paper in a surface manner, a particularly suitable technique involving steam displacement of air from the paper followed by exposure to a silicate solution which effects condensation of steam entrapped in the paper voids, whereby a high vacuum is set up in the paper voids. As a result, and together with other control factors, the silicate is found to become a substantially composite surface to surface mass as distinguished from mere surface residence. The silicated sheet is then dried to a water content such that it may be stored without adhesion of adjacent surfaces and yet the silicate of the stock may later be caused to undergo plastic flow, as by heat and/or pressure, in a shaping-forming laminating type of product manufacture. In the shaping-forming operation specifically set forth, the silicate within the stock, with its highly reduced moisture content rendering it possible to produce dry products, undergoes thermoplastic transition and the silicate of the layers of sheet stock superimposed upon each other is caused to merge across the interfaces and becomes united as a continuous mass of silicate existing in the completed product through its thickness. As a result, products which have not heretofore been conceived, and which are comparable or superior in substantially all respects to known construction materials are provided from two of the cheapest known raw materials.

3,826,704
METHOD OF BONDING POLYOLEFINE TO A SUBSTANCE

Shogo Ohya, 48 Jodoji Kamiminamidacho, Sakyo-ku, Kyoto, Japan; Katsuyuki Hara, 5–4 Ohatacho, Takatsuki, Osaka, Japan; Momoyoshi Takagi, B30–404, 167 Koaza Kanafuri, Aaza Yahataso, Yahatacho, Tsuzuki-gun, Kyoto, Japan; and Masao Kurokawa, 2–21–6–310 Himonya, Meguro-ku, Tokyo, Japan

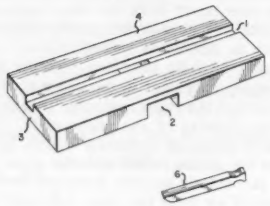
No Drawing. Continuation-in-part of abandoned application Ser. No. 874,073, Oct. 9, 1969. This application Sept. 24, 1971, Ser. No. 183,685
Claims priority, application Japan, July 8, 1969, 44/53,665
Int. Cl. B32b *31/24*; C09j *5/02*
U.S. Cl. 156—306 **1 Claim**

A method of bonding polyolefine to a substance such as a steel plate. The polyolefine and the plate are heated to a temperature equal to the melting point of polyolefine plus at least 100° C., and the melted polyolefine is brought into contact with the plate and kept at the temperature for at least five minutes for producing bonding strength at the boundary surface between the polyolefine and the substance. The boundary surface is cooled by keeping it for at least ten minutes at a further temperature between the temperature T_m where the rate of crystallization is maximized and a temperature of $T_m+80°$ C., or by cooling it from this temperature at a rate of 8° C. per minute. The internal stress caused in the polyolefine is thereby prevented from being concentrated at the boundary surface.

3,826,705
LAP-JOINING RECORDING TAPE SPLICER

Laurence L. Funk, Washington, D.C.
(711 Eno St., Hillsborough, N.C. 27278)

Filed Dec. 20, 1971, Ser. No. 209,824
Int. Cl. B31f *5/00*
U.S. Cl. 156—505 **1 Claim**



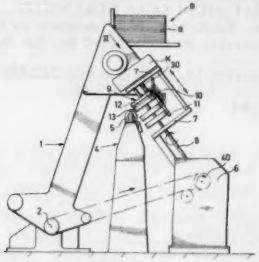
A device with which to splice long-playing magnetic sound recording tape without the use of pressure-sensitive splicing tape. The recording tape is lap-joined with a liquid acrylic solvent, and is prevented from curling into a useless shape while under the influence of the solvent by a channel which directs the tape over a pressure-sensitive surface.

3,826,706
ARRANGEMENT FOR AFFIXING OBJECTS TO TRAVELLING SHEETS

Hans Muller, Zofingen, Switzerland, assignor to Grapha Maschinenfabrik Hans Muller AG, Zofingen, Switzerland

Filed Aug. 7, 1972, Ser. No. 278,651
Claims priority, application Switzerland, Aug. 13, 1971, 11,964/71
Int. Cl. B65c *9/00, 11/04*
U.S. Cl. 156—566 **12 Claims**

A conveyor advances printed sheets in a given path and a supply arrangement supplies objects which are to be affixed to the sheets, provides a line of adhesive on each

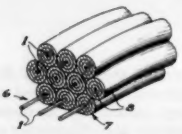


object and contacts the object with its line of adhesive to a respective sheet so as to affix the object thereto.

3,826,707
PYROLYTIC GRAPHITE COMPOSITES

Eugene L. Olcott, Falls Church, Va., assignor to Atlantic Research Corporation

Filed June 28, 1971, Ser. No. 157,138
Int. Cl. B29h *17/28*
U.S. Cl. 161—57 **11 Claims**



A shaped pyrolytic graphite article comprising a pyrolytic graphite matrix containing embedded therein at least one reinforcing refractory strand layer, the refractory being a refractory metal, carbide, boride, nitride, or oxide. The refractory strand layer comprises a plurality of unidirectional and substantially parallel, laterally spaced, individual, continuous refractory strands. The matrix comprises crystallite layers of pyrolytic graphite nucleated from each of the individual refractory strands and interconnected to form a continuous phase surrounding and interconnecting the individual strands comprising the embedded strand layer.

A method for making such pyrolytic graphite articles which comprises progressively positioning continuous refractory strand onto a shaped form and simultaneously pyrolyzing carbonaceous gas onto the strand at about the point of positioning contact to nucleate pyrolytic graphite from the strand, progressively positioning additional strand laterally spaced from previously positioned strand and, as the additional strand is positioned, simultaneously pyrolyzing the carbonaceous gas on the additional strand at about the point of positioning contact and on the pyrolytic graphite nucleated from previously positioned strand to form a continuous pyrolytic graphite matrix interconnecting laterally spaced strands.

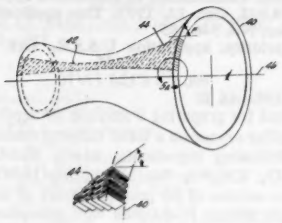
3,826,708
ROCKET NOZZLE LINER CONSTRUCTION

Aram J. Dervy, Santa Monica, Calif., assignor to McDonnell Douglas Corporation

Original application May 18, 1970, Ser. No. 38,264, now Patent No. 3,701,704. Divided and this application Feb. 28, 1972, Ser. No. 230,149
Int. Cl. B32b *5/16*
U.S. Cl. 161—162 **6 Claims**

Rocket nozzle liner is formed from substantially identical longitudinal segments which have been circumferen-

tially fused together into an integral unit. Rectangular flakes are preferably cut from cloth material having good insulative and ablative properties to provide flakes of the same width but of different lengths, the length of a flake being a function of the nozzle liner thickness at the longi-



tudinal point where such flake is to be used. The flakes are preferably cut so that the dominant warp filaments of each flake are generally parallel to its length, and each liner segment is molded from suitably arranged flakes to provide a segment having predetermined warp filament orientations therein.

3,826,709

PROCESS FOR LAMINATING PHOSPHATE COATED STEEL WITH ABS RESIN

Darral V. Humphries, Allentown, Pa., assignor to Bethlehem Steel Corporation

No Drawing. Original application Sept. 2, 1969, Ser. No. 854,721, now abandoned. Divided and this application Apr. 25, 1972, Ser. No. 247,390

Int. Cl. B32b *27/30, 27/32*

U.S. Cl. 161—217 **1 Claim**

In forming a coating of acrylonitrile-butadiene-styrene (ABS) resin on a phosphated steel surface, a primer of an ABS resin is first applied to the steel in the form of a solution. After evaporating the solvent from the primer solution, and fusing the solid primer to the metal, sheet ABS resin is applied and molded by heat and pressure to the primed steel surface.

3,826,710

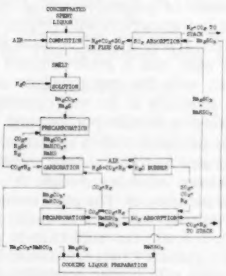
CARBONATION SYSTEM FOR RECOVERY OF SODIUM BASE PULPING LIQUOR

Clyde G. Anderson, Cincinnati, Ohio, assignor to Owens-Illinois, Inc.

Filed Apr. 21, 1972, Ser. No. 246,366

Int. Cl. D21c *11/02, 11/06*

U.S. Cl. 162—36 **2 Claims**



This invention provides an integrated closed carbonation system for recovering sodium base sulfite pulping liquor which is of interest chemically, thermally and ecologically. The system includes in combination (1) smelt solutions containing from 33 to 67 mol percent sodium sulfide with the balance primarily sodium carbonate, (2) self-sufficiency in carbon dioxide for displacement of the sulfide, (3) temperatures during carbonation of from 140°–180° F., (4) an intermediate concentration of CO_2 for carbonation, (5) systems for cycling various gas streams to conserve and reuse carbon dioxide while still purging the system of nitrogen and in particular the recycling of purge gases from a precarbonation zone to a main carbonation zone, (6) production of gases containing H_2S at a concentration greater than 6% by volume suitable for direct combustion to SO_2, and (7) purge gases essentially free of either H_2S or SO_2.

3,826,711

SHEETED CELLULOSE DERIVATIVE FIBERS

Howard Leon Schoggen, John Richard Holmgren, and Thomas Sanders Harris, Jr., Memphis, Tenn., assignors to The Buckeye Cellulose Corporation, Cincinnati, Ohio

No Drawing. Filed Apr. 17, 1972, Ser. No. 244,857

Int. Cl. D21h *5/26*

U.S. Cl. 162—102 **14 Claims**

Coherent sheets of at least partially water soluble and water swellable carboxy methyl cellulose fibers having requisite physical properties for handling and comminution are prepared by slurrying said carboxy methyl cellulose fibers in aqueous organic slurry media and forming fibrous sheets from the fibrous slurries. The fibrous sheets are then dried after displacement of additional amounts of water from the formed sheets, by successive stages of aqueous alcoholic solution displacement washing of decreasing water content, so that final drying proceeds from a moist fibrous sheet containing 0.02 to 0.5, preferably 0.02 to 0.3, parts by weight of water to carboxy methyl cellulose fiber.

3,826,712

ACRYLIC SYNTHETIC PAPER AND METHOD FOR PRODUCING THE SAME ACRYLIC FIBERS WET SPUN FROM A BLEND OF HYDROLYZED AND UNHYDROLYZED ACRYLIC POLYMERS HAVING AT LEAST 60% ACRYLONITRILES BY WEIGHT AND PAPER MADE FROM SUCH FIBERS

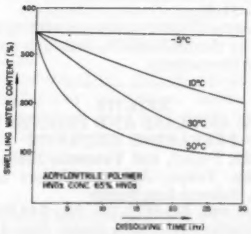
Yoshinori Masuda, Hideo Sato, Tadahiro Kobayashi, and Yoshiaki Terada, Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha

Filed Jan 3, 1973, Ser. No. 320,763

Claims priority, application Japan, Jan. 18, 1972, 47/6,616; July 27, 1972, 47/74,663

Int. Cl. D21h *5/12*

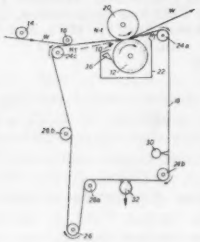
U.S. Cl. 162—157 R **6 Claims**



Acrylic synthetic paper having an improved strength is provided. Acrylic polymer was dissolved and hydrolyzed in a concentrated nitric acid to obtain a polymer with a swelling water content being not more than 200%; the thus hydrolyzed polymer was blended with up to 95% by weight of an unhydrolyzed acrylic polymer having an acrylonitrile content of at least 30% such that the total

acrylonitrile content is at least 60% by weight, then the resulting blend was wet spun by nitric acid to obtain acrylic fiber; and further the resultant acrylic fiber was beaten, converted into a paper sheet and then dried to obtain the acrylic synthetic paper with an improved strength.

3,826,713
PAPER MACHINE PRESS SECTION AND METHOD FOR USING SAME
Erik A. Nykopp, Tampere, Finland, assignor to Oy Tampella AB, Tampere, Finland
Continuation of abandoned application Ser. No. 753,490, Aug. 19, 1968. This application Apr. 28, 1972, Ser. No. 248,593
Int. Cl. B21f *11/00*
U.S. Cl. 162—205 **19 Claims**



A paper web and its supporting felt or a felt only is dewatered employing a press assembly comprising a pair of press rolls in nip-defining relation wherein one of the press rolls is a blind drilled roll. On the off-running side of the nip the felt is guided away from the nip on the side of the nip tangent plane opposite the blind drilled roll at an angle defined between the felt and the common tangent plane. The blind drilled roll is disposed in a save-all having a side wall terminating at an upper edge spaced closely adjacent to the common tangent plane and the nip to prevent water from entering the felt on the off-running side of the nip.

3,826,714
THERMOPHILIC GLUCOSE ISOMERASE ENZYME PREPARATION
Mikio Suekane, Saitama, and Mutsuo Kanno and Shiro Hasegawa, Tokyo, Japan, assignors to CPC International Inc.
No Drawing. Filed Oct. 26, 1971, Ser. No. 192,313
Int. Cl. C12b *1/00*
U.S. Cl. 195—31 F **16 Claims**

Describes a new glucose isomerase enzyme preparation characterized by thermal stability and high optimum temperature of enzyme activity.

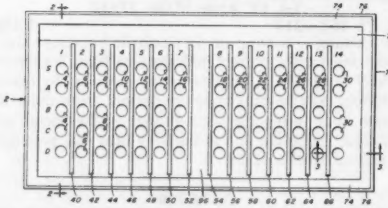
3,826,715
NOVEL AMYLASE AND PROCESS FOR PREPARING THE SAME
Koki Horikoshi, Fujimi, and Yonosuke Ikeda and Yoshitake Tanaka, Tokyo, Japan, assignors to Rikagaku Kenkyusho, Saitama-ken, Japan
Filed Apr. 14, 1972, Ser. No. 244,046
Claims priority, application Japan, Apr. 19, 1971, 46/25,079
Int. Cl. C07g *7/02*
U.S. Cl. 195—66 R **5 Claims**

A novel amylase characterized by being a liquefying amylase having broad optimal pH values of 4.5, 7 and 9, and a method for preparing thereof characterized by fermentation of a strain of microorganism, *Bacillus* sp. No. 38-2 (ATCC 21783) in an alkaline culture medium containing a carbonate.

3,826,716
METHOD FOR PREPARING α-AMYLASE
Georgy Ivanovich Kvesitadze, ulitsa Abasheli 7a, and Georgy Nikolaevich Kokonashvili, ulitsa Perovskoi 4, both of Tbilisi, U.S.S.R., and Raisa Vasilievna Fenixova, ulitsa Novoslobodskaya 67/69, kv. 167, Moscow, U.S.S.R.
No Drawing. Continuation of abandoned application Ser. No. 189,032, Oct. 13, 1971. This application Apr. 2, 1973, Ser. No. 346,785
Claims priority, application U.S.S.R., Oct. 20, 1970, 1,479,555
Int. Cl. C12d *13/10*
U.S. Cl. 195—66 R **2 Claims**

A method for preparing α-amylase by depth cultivation of *Aspergillus oryzae* on a water nutrient medium containing the following ingredients: starch, $NaNO_3$, $MgSO_4$, KCl, $FeSO_4$, KH_2PO_4, $Mg(NO_3)_2$, $Mg(H_2PO_4)_2$ and 20 percent by volume of 20 percent extract of malt sprouts. The culture filtrate is dialyzed with phosphate buffer at pH 6.5–7.5. From the dialyzate, the α-amylase is adsorbed on diethylamine ethylcellulose and then eluted with a phosphate buffer (from 0.04 to 0.12M) at pH 6.5–7.5 containing $CaCl_2$ (0.0003–0.001M).

3,826,717
QUANTITATIVE ANTIBIOTIC TEST CONTAINER
Verne E. Gilbert, Oak Ridge, Tenn., and Arnold B. Silverman, Pittsburgh, Pa., assignors to Verne E. Gilbert, Oak Ridge, Tenn.
Filed Feb. 26, 1973, Ser. No. 335,520
Int. Cl. C12k *1/04*
U.S. Cl. 195—103.5 R **26 Claims**



A quantitative antibiotic test container having a plate member provided with a plurality of integrally formed upwardly open test wells and an elongated upwardly open specimen receiving trough. The wells are preferably disposed in a number of generally parallel rows which are oriented generally transversely with respect to the trough. The wells are filled with a solid nutrient media, such as Trypticase Soy agar, and a predetermined concentration of an antibiotic, with the upper surface of the mixture being disposed generally at the well opening. A specimen distributor having a handle portion and an elongated head portion is provided with a specimen receiving section so configurated as to be at least partially receivable within the specimen receiving trough. A cover member overlying the plate member. The plate member preferably has elongated barrier elements to resist flow of fluids between adjacent rows. An antibiotic is provided in a given row with a number of predetermined concentrations in successive wells with higher concentration in a given row preferably being in the well more remote from the trough. One or more standard wells having solid nutrient media but no antibiotic may be provided.

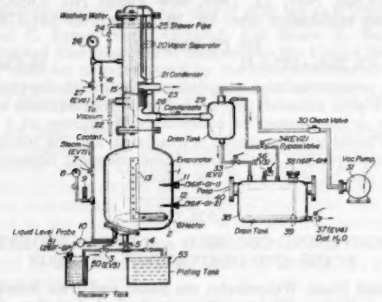
A method of effecting antibiotic sensitivity testing employing the container described.

3,826,718

APPARATUS FOR AUTOMATICALLY EFFECTING VACUUM CONCENTRATION AND RECOVERY OF WASTE LIQUID

Kiyosumi Takayasu, 2, 5-chome, Horita-Dori, Mizuho-ku, Nagoya, Japan

Filed Mar. 23, 1973, Ser. No. 343,952
Claims priority, application Japan, Mar. 25, 1972, 47/29,393
Int. Cl. B01d *1/00, 3/00, 3/42;* **F28b**
U.S. Cl. 202—181 **1 Claim**



An apparatus for automatically effecting vacuum concentration and recovery of waste liquid comprising an evaporating vessel of which volume is relatively small and which is provided on its top with a steam riser tube which is occupied by a vapor separator and a condenser. The condenser is subjected through a drain tank consisting of two tanks connected in series, to vacuum. A waste liquid in a waste liquid recovery tank is supplied into the evaporating vessel and is heated by a steam heater and steam thus produced is condensed into distilled water by the condenser, the distilled water being discharged through the drain tank to the outside. The liquid level in the evaporating vessel, water level in the drain tank and liquid level in the waste liquid recovery tank are controlled by relays arranged on a control board in a manner such that the evaporating and concentrating operations of the waste liquid and discharge of distilled water are automatically repeated for a given number of times. The starting and stop of these automatic operations are manually effected.

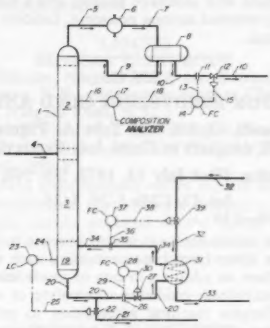
3,826,719

FRACTIONATOR CONTROL SYSTEM FOR REBOILING NARROW BOILING RANGE LIQUIDS

David M. Boyd, Clarendon Hills, and Charles E. Wood, Mount Prospect, Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Continuation of abandoned application Ser. No. 7,024, Jan. 30, 1970. This application Mar. 17, 1972, Ser. No. 235,761
Int. Cl. B01d *3/42*
U.S. Cl. 203—1 **10 Claims**

Method and system for controlling the reboiling function of a fractional distillation column. Means is provided for passing reboiler liquid from a lower section of the column to the reboiler at a constant predetermined rate of flow. Operatively associated with the reboiler, is a means to vary the heat input thereto. Operatively associated with the reboiler vapor return line is a means for establishing a flow signal representative of the rate of flow of heated fluid passing therethrough. Although the flow signal is not directly correlatable with the rate of flow of the heated fluid, since the heated fluid normally leaving the reboiler is a vapor-liquid mixture, the flow signal is passed to the heat input varying means, whereby heat input is regulated responsive to the flow signal. The phase distribution of the vapor-liquid mixture is thereby held constant, thus maintaining the column under conditions of thermal equilibrium. The invention has particular applica-



tion where the reboiler liquid is a substantially pure compound or a component mixture having a boiling range of about 10° F. or less.

3,826,720

RECOVERY OF A MONOGLYCERIDE BY AZEOTROPIC DISTILLATION WITH AN ALCOHOL

Erlend Rupert Lowrey, Greenhills, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

No Drawing. Filed May 1, 1972, Ser. No. 249,051
Int. Cl. B01d *3/36;* **C11b** *3/12*
U.S. Cl. 203—20 **8 Claims**

The recovery of surface-active agents from aqueous solvents by use of unsubstituted, low carbon aliphatic alcohol to form a heterogeneous, minimum boiling point azeotrope and removing said azeotrope from said surface active agent by conventional distillation and evaporation techniques. The process of this invention permits the recovery of surface-active agents from heterogeneous mixtures and a reduction of foaming to below a level which is considered significant.

ERRATUM

For Class 204—1 see:
Patent No. 3,826,971

3,826,721

METHOD OF FORMING LITHIUM-DOPED GERMANIUM BODIES BY ELECTRODEPOSITION IN A FUSED LITHIUM ELECTROLYTE

Robert N. Hall, Schenectady, N.Y., assignor to General Electric Company

No Drawing. Filed Oct. 24, 1972, Ser. No. 299,921
Int. Cl. C23b *5/00*
U.S. Cl. 204—39 **10 Claims**

Heavily lithium-doped N^+ surface-adjacent regions are formed in high-purity germanium bodies by electrodeposition thereof from a bath of fused lithium salt at a temperature at which the solubility of copper in germanium is negligible.

3,826,722

ELECTROLYTIC ACIDIC SOLUTION FOR CADMIATING OF VARIOUS PARTS

Maurice Roger Accaries, Bourg-la-Reine, and Maurice Emile Girard, Paris, France, assignors to Compagnie des Compteurs, Paris, France

No Drawing Continuation of abandoned application Ser. No. 102,555, Dec. 29, 1970. This application Nov. 22, 1972, Ser. No. 308,789
Int. Cl. C23b *5/12, 5/46*
U.S. Cl. 204—50 R **6 Claims**

Electrolytic acidic solution for cadmiating of various

parts containing, in an aqueous demineralised carrier, a cadmium salt, a free acid, a brightening agent selected from the class consisting of a semithiocarbazone compound attached to a thiourea group and a dithiocarbamic acid condensed with aldehyde phenol, and a wetting agent indifferently selected among nonionic, cationic or anionic wetting agents.

3,826,723

PROCESS FOR RECOVERING GOLD AND SILVER

Jack L. Woods, Ogden, and Tobe A. Pittman, Centerville, Utah, assignors to Elmet, Inc., Centerville, Utah

No Drawing. Filed July 13, 1972, Ser. No. 271,545

Int. Cl. C23b *5/26, 5/28*
U.S. Cl. 204—110 **1 Claim**

A unique, continuous extraction process for extracting gold and/or silver from ores containing such values. The process utilizes, in addition to one or more leaching compounds, a stabilized, oxidizing electrolyte or electrolytes which accelerates leaching in addition to providing an electrolyte for effecting the subsequent continuous electrodeposition of such metals.

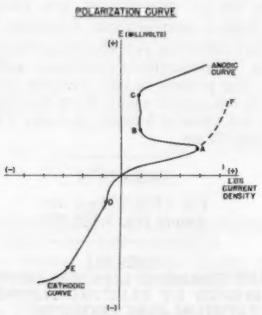
3,826,724

METHOD OF REMOVING A METAL CONTAMINANT

Olen Lonnie Riggs, Jr., 7119 NW. 32nd St., Bethany, Okla. 73008, and Lyll Stanley Surtees, 3028 Stonybrook Road, Oklahoma City, Okla. 73120

Filed Sept. 11, 1972, Ser. No. 289,934

Int. Cl. C23b *1/00;* **B01k** *3/00*
U.S. Cl. 204—140 **7 Claims**



The present invention relates to a method of conditioning a metal substrate. More particularly, the present invention relates to a method of removing a metal contaminant plated on a different metal substrate such as, for example, an electrode used in a metal electrodeposition process.

3,826,725

BREAKING OF OIL-IN-WATER EMULSIONS

John W. Schick, Cherry Hill, and Donald R. Cushman, Wenonah, N.J., assignors to Mobil Oil Corporation

No Drawing. Filed Nov. 30, 1972, Ser. No. 311,030

Int. Cl. B01k *3/04;* **C02b** *1/82*
U.S. Cl. 204—149 **8 Claims**

A method is provided for breaking an oil-in-water emulsion, which comprises: adjusting the emulsion with an electrolyte to a pH not higher than about 4; and transmitting direct electric current through the thus-adjusted emulsion to obtain a pH of at least 5, whereby the emulsion is resolved into a water phase and an oil phase.

3,826,726

PRODUCTION OF PURE METALS

Warren H. Philipp, North Olmsted, Stanley J. Marsik, Fairview Park, and Charles E. May, Rocky River, Ohio, assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration

No Drawing. Continuation-in-part of application Ser. No. 876,588, Nov. 13, 1969, now Patent No. 3,658,569. This application Apr. 18, 1972, Ser. No. 245,279

Int. Cl. B01j *1/10*
U.S. Cl. 204—157.1 H **10 Claims**

A process for depositing elements by irradiating liquids. Ultra pure elements are precipitated from aqueous solutions or suspensions of compounds. A solution of a salt of a metal to be prepared is irradiated, and the insoluble reaction product settles out. Some chemical compounds may also be prepared in this manner.

3,826,727

BRIGHTENING COLORED α-AMINOCARBOXYLIC ACIDS AND DERIVATIVES THEREOF

Helmut Daut, Weisenheim am Sand, and Uwe Soenksen and Walter Wielant, Wiersdorff, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Feb. 4, 1972, Ser. No. 223,517

Claims priority, application Germany, Feb. 11, 1971, P 21 06 415.3

Int. Cl. B01j *1/10*
U.S. Cl. 204—158 R **6 Claims**

A process for brightening colored α-aminocarboxylic acids and their derivatives which bear at least one carboxyl group or its anion in the α-position on each basic nitrogen atom by means of high intensity radiation.

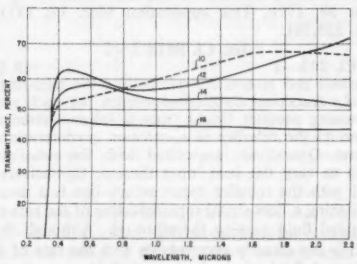
3,826,728

TRANSPARENT ARTICLE HAVING REDUCED SOLAR RADIATION TRANSMITTANCE AND METHOD OF MAKING THE SAME

Douglas L. Chambers, Donald C. Carmichael, and Chong T. Wan, Columbus, Ohio, assignors to Shatterproof Glass Corporation, Detroit, Mich.

Continuation of abandoned application Ser. No. 38,962, May 20, 1970. This application May 15, 1972, Ser. No. 253,278

Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **2 Claims**



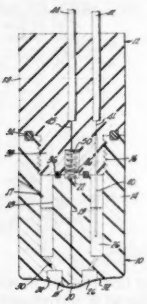
A transparent article having reduced solar radiation transmittance which comprises a body of transparent

glassy siliceous material having a smooth continuous surface and a continuous film of nickel or nickel-base alloys sputter-coated on said continuous surface to a thickness of from 50 to 400 A. The article may include a continuous protective layer of a siliceous or aluminum oxide material overlying the continuous film. The sputter-coating technique permits the metal film to be deposited with greater uniformity and purity. The resulting article minimizes the transmittance of radiation in the infra-red range for any selected transmittance of visible light.

3,826,729
SPUTTERING HOLES WITH ION BEAMLETS
David C. Byers, North Olmsted, and Bruce A. Banks, Olmsted Township, Ohio, assignors to the United States of America as represented by the Administrator of the National Aeronautics and Space Administration
No Drawing. Filed Sept. 27, 1972, Ser. No. 292,686
Int. Cl. C23c *15/00*
U.S. Cl. 204—192 **10 Claims**

Ion beamlets of predetermined configurations are formed by shaped apertures in the screen grid of an ion thruster having a double grid accelerator system. A plate is placed downstream from the screen grid holes and attached to the accelerator grid. When the ion thruster is operated holes having the configuration of the beamlets formed by the screen grid are sputtered through the plate at the accelerator grid.

3,826,730
DISPOSABLE ELECTROCHEMICAL ELECTRODE
Hideo Watanabe and John E Leonard, Fullerton, Calif., assignors to International Biophysics Corporation, Irvine, Calif.
Continuation of abandoned application Ser. No. 91,975, Nov. 23, 1970. This application Sept. 5, 1972, Ser. No. 286,199
Int. Cl. G01n *27/46*
U.S. Cl. 204—195 P **3 Claims**



A disposable electrochemical cell electrode assembly for use in amperometric electrochemical cells. The disposable electrode assembly includes a selectively permeable membrane which is spaced a predetermined distance from the electrode. The disposable electrode assembly is threadedly attached to a permanent electrode assembly to complete the electrochemical cell.

3,826,731
BIPOLAR ELECTRODE
Robert F. Schultz, Niagara Falls, and Edward H. Cook, Jr., Lewiston, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.
No Drawing. Filed May 25, 1973, Ser. No. 364,202
Int. Cl. B01k *1/00, 3/06;* C01b *11/26*
U.S. Cl. 204—290 F **6 Claims**

An improved dimensionally-stable bipolar electrode for use in electrochemical processes comprising a central valve metal layer, suitable anodic material on the anode side of the support and a barrier layer of silicon on the cathodic side of the valve metal. Such bipolar anodes function at reduced hydrogen permeability rates during use in electrolytic processes.

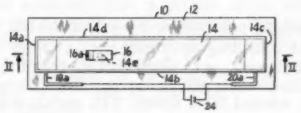
3,826,732
BIPOLAR ELECTRODE
Robert F. Schultz, Niagara Falls, and Edward H. Cook, Jr., Lewiston, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.
No Drawing. Filed May 25, 1973, Ser. No. 364,203
Int. Cl. B01k *1/00, 3/06;* C01b *11/26*
U.S. Cl. 204—290 F **10 Claims**

An improved dimensionally-stable bipolar electrode for use in electrochemical processes, comprising a valve metal layer, suitable anodic material on the anode side of the valve metal, a barrier layer of tungsten on the cathode side of the valve metal, the tungsten layer coated with a layer of iron or nickel.

3,826,733
BIPOLAR ELECTRODE
Robert F. Schultz, Niagara Falls, and Edward H. Cook, Jr., Lewiston, N.Y., assignors to Hooker Chemical Corporation, Niagara Falls, N.Y.
No Drawing. Filed May 25, 1973, Ser. No. 364,204
Int. Cl. B01k *1/00, 3/06;* C01b *11/26*
U.S. Cl. 204—290 F **6 Claims**

An improved dimensionally-stable bipolar electrode for use in electrochemical applications comprising a central valve metal layer, suitable anodic material on the anode side of the valve metal and a barrier layer of boron on the cathodic side of the valve metal. Such electrodes function at low hydrogen permeability rates during use in elecrolytic processes.

3,826,734
APPARATUS FOR USE IN LIQUID SAMPLE ANALYSIS
Frank W. Godsey, Jr., St. Petersburg, Fla., assignor to Bio-Medical Sciences, Inc., Fairfield, N.J.
Filed June 26, 1972, Ser. No. 266,449
Int. Cl. B01k *5/00*
U.S. Cl. 204—299 **10 Claims**

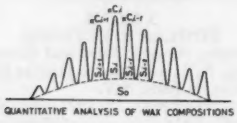


An electrophoretic cell having an elongate electrolytic expanse is enveloped between an overlayer and a substrate, the overlayer including a closable opening through which a liquid sample may be applied to a preselected location on the elongate electrolytic expanse. The cell provides for separation of the constituents of the sample on application or preselected electric voltage to the cell electrodes.

3,826,735
WAX COMPOSITION FOR PROTECTING RUBBERS AGAINST ATTACK OF OZONE
Toshihiko Shinomura, Kawasaki, Japan, assignor to Nippon Oil Company, Tokyo, Japan
Filed Mar. 7, 1973, Ser. No. 338,674
Claims priority, application Japan, Mar. 8, 1972, 47/23,105
Int. Cl. C08h *9/00*
U.S. Cl. 208—21 **3 Claims**

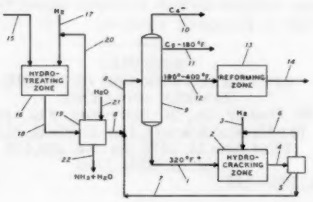
Wax compositions are disclosed which are useful for preventing rubber from becoming degraded or otherwise

damaged in contact with ozone in the atmosphere, said compositions comprising two types of normal chain hydrocarbons, one having a carbon number greater than the



other. Selected weight percentages of the respective hydrocarbons permit the wax composition to exhibit and maintain the desired performance in a relatively widely varying temperature environment.

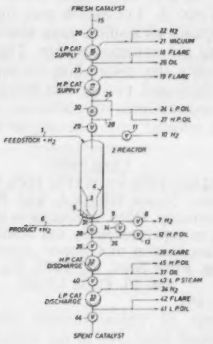
3,826,736
HYDROCARBON CONVERSION CATALYST AND PROCESS USING SAID CATALYST
James R. Kittrell, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.
Application Apr. 12, 1971, Ser. No. 133,401, now Patent No. 3,764,562, which is a continuation of abandoned application Ser. No. 834,067, June 17, 1969. Divided and this application Mar. 1, 1973, Ser. No. 337,219
Int. Cl. C10g *13/02, 37/06*
U.S. Cl. 208—59 **8 Claims**



Hydrocracking processes using a hydrocarbon conversion catalyst consisting essentially of: (a) a gel selected from silica-alumina gel, silica-alumina-titania gel and silica-alumina-zirconia gel, (b) at least one hydrogenating component selected from Group VIII metals and oxides and sulfides thereof and combinations of Group VIII metals and oxides and sulfides thereof with tin, and (c) a hydrogenating component selected from manganese and oxides and sulfides thereof.

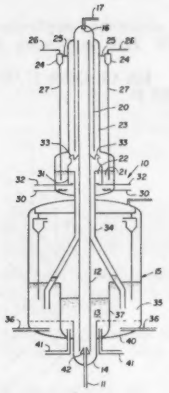
3,826,737
PROCESS FOR THE CATALYTIC TREATMENT OF HYDROCARBON OILS
Abraham A. Pegels, The Hague, and Joannes B. Wijffels, Amsterdam, Netherlands, assignors to Shell Oil Company, New York, N.Y.
Filed Feb. 6, 1973, Ser. No. 330,142
Claims priority, application Great Britain, Feb. 21, 1972, 7,948/72
Int. Cl. C10g *23/08*
U.S. Cl. 208—143 **10 Claims**

A continuous process and apparatus for the catalytic treatment of hydrocarbon oils wherein an oil is passed over a catalyst bed within a reactor, the bottom of which contains a catalyst discharge funnel incorporating a screen for separating catalyst and oil at a point above the exit of the funnel, fresh catalyst being introduced at the top of the catalyst bed and spent catalyst being withdrawn at the bottom thereof while the process is operating. The catalyst discharge funnel preferably consists of at least



two inverted conical sections connected by means of a cylindrical screen section.

3,826,738
FOLDED TRANSFER LINE REACTOR
Frederick A. Zenz, Roslyn Harbor, N.Y. (Box 205, Rte. 9D, Garrison, N.Y. 10524)
Filed Mar. 23, 1972, Ser. No. 237,346
Int. Cl. B01j *9/16*; B65g *53/00*; C10g *13/14*
U.S. Cl. 208—153 **8 Claims**



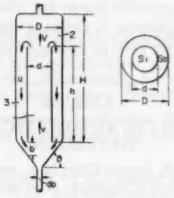
A folded transfer line reactor in which a reverse flow of gas or vaporized liquid is introduced at points of change in direction of gas and solid flow to cushion the following particles and thereby avoid erosion of the transfer line and attrition of the particles.

There is also disclosed a transfer line reactor in which recycled slurry is introduced into the reactor at a point intermediate the ends of the reactor (either a straight or folded reactor) to thereby control the degree of cracking of the recycled slurry.

3,826,739
METHOD OF CONTACTING FLUIDS AND SOLID PARTICLES
Junichi Kubo and Yoshio Tajima, Kawasaki, Japan, assignors to Nippon Oil Company, Ltd., Tokyo, Japan
Filed Dec. 28, 1971, Ser. No. 212,913
Int. Cl. C10g *23/10*
U.S. Cl. 208—157 **8 Claims**

A process for contacting particulate solids intimately with liquid using a reactor comprising a contact zone (1),

a sedimentation zone (2) positioned in series with the contact zone, and an overflow zone (3) positioned above the zones (1) and (2) and having a cross sectional area larger than that of the contact zone, wherein the cross sectional area of the overflow zone and the speed of feeding the liquid upwards from the lower portion of the zone (1) are adjusted to proper values, whereby the particles are fluidized in zone (1) and overflowed from zone (1);



the overflowing particles immediately begin to be sedimented in zone (3) without fluidization; and the sedimented particles return from zone (2) to zone (1) without forming an undisturbed layer in the zone (2), in which the particulate solids are deposited, and thus, the liquid and the particles together are circulated from zone (1) to the lower portion of zone (3), zone (2), and zone (1) in this order.

3,826,740

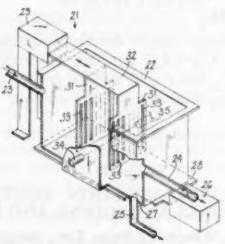
METHOD AND APPARATUS FOR TREATING MULTI-PHASE SYSTEMS

Warren R. Jewett, 44 Russell Ave., Orange, Conn. 06477

Continuation-in-part of abandoned application Ser. No. 258,014, May 30, 1972. This application Apr. 19, 1973, Ser. No. 352,549

Int. Cl. C02c *1/00*

U.S. Cl. 210—19 **15 Claims**



The method of treating a multi-phase system to enhance the separability of at least one discontinuous phase contained therein comprising subjecting the system to at least two disturbances propagated within the system to form at least two wave trains at two different frequencies within the audio frequency range, while avoiding cavitation within the system.

The present invention also discloses an apparatus for treating a multi-phase system having a liquid continuous phase to enhance the separability of a dispersed phase contained within the system, comprising means for confining a volume of the system to be treated, and first and second means for generating vibratory disturbances within the volume to form respective trains of waves therewithin, the first and second generating means being positioned with respect to each other so that the respective wave trains formed within the volume mix.

3,826,741

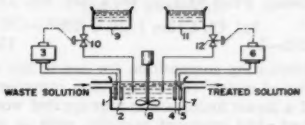
METHOD OF TREATING WASTE SOLUTION CONTAINING CHROMATE ION OR CYANIDE ION

Toshihiko Nakamura, Yokohama, Japan, assignor to Nihon Filter Co., Ltd., Tokyo, Japan

Filed Nov. 3, 1972, Ser. No. 303,636

Int. Cl. C02b *1/34*

U.S. Cl. 210—50 **1 Claim**



A method of treating a waste solution containing chromate ion or cyanide ion, wherein a redox potentiometer with a pH correction circuit is used instead of separate redox potentiometer and pH meter commonly used in the conventional treating method of waste solution, said redox potentiometer with a pH correction circuit has a redox potential detecting part and a pH detecting part for the detection of the redox potential and the pH electromotive force of the waste solution being treated and the output voltages are superposed within said pH correction circuit so that the variations of redox potential caused by the variations of pH value of the waste solution is compensated and a corrected output voltage which indicates the redox potential corresponding to a pre-set pH value of the waste solution is generated, the redox potential and the pH electromotive force of the waste solution being treated in the treatment tank are detected respectively by said redox potential detecting part and pH detecting part of said redox potentiometer with a pH correction circuit, and the amount of treating chemicals being fed into said treatment tank is adjusted, by a flow regulator which is controlled in response to the corrected output voltage delivered from said pH correction circuit of the redox potentiometer, to a quantity as the chemical reaction is carried out at the equivalence point.

3,826,742

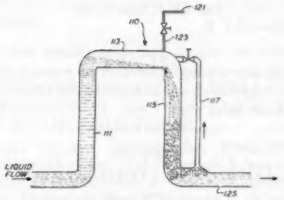
GAS ABSORPTION SYSTEM AND METHOD

Bradley S. Kirk, Warren Township, Plainfield County, and Raymond M. Chappel, Mendham, N.J., assignors to Airco, Inc., New York, N.Y.

Filed Sept. 20, 1971, Ser. No. 181,785

Int. Cl. C02b *3/08*

U.S. Cl. 210—63 **19 Claims**



A gas absorption system for adding oxygen to a liquid phase flowing in the system. The liquid phase is subjected to fall through an enclosed gravitational fall zone, which zone is proportioned in relation to system flow as to permit simultaneous presence within the enclosure of the liquid phase and a gaseous oxygen phase. The oxygen is provided by injection means or the like, and means may

additionally be present for matching the rate of oxygen feed to the rate of consumption at the fall zone.

3,826,743

DIE LUBRICATING COMPOSITION

Frederick J. Kohls, South Milwaukee, Bruce W. Boldt, Milwaukee, and Wilfred A. Gouge, Sr., South Milwaukee, Wis., assignors to Ladish Co., Cudahy, Wis.

No Drawing. Filed Mar. 2, 1973, Ser. No. 337,668

Int. Cl. C10m *1/20, 1/22*

U.S. Cl. 252—14 12 Claims

A die lubricating composition for use in hot working and forming of metal. The composition comprises a suspension of a liquid hydrocarbon-impregnated wood flour particles and solid lubricant particles, such as graphite, in water. When applied to a heated die, the composition will provide the necessary lubrication as well as an explosive force to liberate the part from the die with minimal contamination of the environment.

3,826,744

LUBRICANT FOR HIGH TEMPERATURE, NON-CHIP METAL FORMING

Rudiger Holinski and Oswald Schanzer, Munich, Germany, assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Filed June 30, 1971, Ser. No. 158,586

Claims priority, application Germany, Sept. 22, 1970, P 20 46 727.0; Feb. 24, 1971, P 21 08 738.7

Int. Cl. C10m *3/18, 3/04, 7/20*

U.S. Cl. 252—23 2 Claims

A lubricant for high temperature non-chip metal forming consisting esentially of (I) 2 to 100% by weight of a mixture of (A) 35 to 47% by weight of an alkali metal sulfate, calculated in its anhydrous form, (B) 14 to 26% by weight borax, (C) 3.5 to 10% by weight of potassium chloride, (D) 3.5 to 10% by weight of sodium acetate trihydrate, (E) 10 to 32% by weight of pulverized graphite having a particle size not exceeding 10 mμ. and (II) 0 to 98% by weight of water.

3,826,745

COMPOSITIONS CONTAINING METAL DIALKYL DITHIOPHOSPHATES ARE INHIBITED AGAINST HAZE AND PRECIPITATES BY AMINE SALTS OF MIXED ACID PHOSPHATES

Jack Ryer, East Brunswick, and Remi H. Renard, North Brunswick, N.J., assignors to Esso Research and Engineering Company

No Drawing. Filed June 30, 1972, Ser. No. 268,146

Int. Cl. C10m *1/48*

U.S. Cl. 252—32.7 E 4 Claims

Amine salts of mixed acid phosphates are combined with metal dialkyl dithiophosphates to prevent and control haze and precipitation in compositions containing these dithiophosphate salts.

3,826,746

LUBRICANT COMPOSITIONS

John W. Schick, Cherry Hill, and Robert H. Davis, Pitman, N.J., and Charles A. Simpson, Aston, Pa., assignors to Mobil Oil Corporation

No Drawing. Filed July 18, 1972, Ser. No. 273,002

Int. Cl. C10m *1/32, 3/26*

U.S. Cl. 252—51.5 R 6 Claims

Lubricant compositions are provided containing biocidal effective amounts of a substituted nitropyridine and an acid.

3,826,747

TONER FOR ELECTROPHOTOGRAPHY

Shinichiro Nagashima, Kaichi Tsuchiya, Yoshihiro Sakamoto, and Hiroshi Yamakami, Tokyo, and Seiji Tomari, Yokohama, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

No Drawing. Filed May 9, 1973, Ser. No. 358,534

Claims priority, application Japan, May 15, 1972, 47/47,896

Int. Cl. G03g *9/02*

U.S. Cl. 252—62.1 5 Claims

A positive chargeable toner for electrophotography is prepared by dispersing a coloring agent and a chelate compound of ethylene diamine tetraacetic acid and a metal of bi-, tri- or tetravalence, into a binding resin.

3,826,748

NON-PHOSPHATE AUTOMATIC DISHWASHER DETERGENT

Patricia A. Finck, Jersey City, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 133,338, Apr. 12, 1971, now Patent No. 3,701,735.

This application Dec. 3, 1971, Ser. No. 204,751

The portion of the term of the patent subsequent to Oct. 31, 1989, has been disclaimed

Int. Cl. C11d *7/08, 7/14, 7/16*

U.S. Cl. 252—99 14 Claims

An alkaline dishwasher detergent capable of inhibiting overglaze attack and essentially free of inorganic phosphates, containing at least 25% by weight of a water-soluble aminopolycarboxylic compound, about 1–20% sucrose and about 1–20% overglaze protector.

3,826,749

DETERGENT COMPOSITION

M. Yvon Demangeon, Ermont, France, and M. Per Hjorth Rasmussen, Copenhagen, Denmark, assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Jan. 24, 1972, Ser. No. 220,480

Int. Cl. C11d *9/32*

U.S. Cl. 252—121 3 Claims

A controlled foam profile detergent composition containing a C_{11} to C_{13} alkyl benzene sulfonate, a sodium soap of C_{14} to C_{22} fatty acid and an ethoxylated dinonyl phenol. The composition can also contain an alkaline builder salt.

3,826,750

NOBLE METALS SOLVATION AGENTS—HYDROXYKETONES AND IODINE AND IODIDE

Harold W. Wilson, El Paso, Tex., assignor to Golden Cycle Corporation

No Drawing. Original application Jan. 8, 1970, Ser. No. 1,563, now Patent No. 3,709,681. Divided and this application Sept. 25, 1972, Ser. No. 291,636

Int. Cl. C22b *11/04*

U.S. Cl. 252—187 R 9 Claims

Processes for and compositions utilized in the recovery of noble metals from noble metal containing substances by subjecting such substances—preferably in comminuted form—to the action of a solvent preferably comprising diacetone alcohol as a major component, water, minor amounts of glacial acetic acid, potassium iodide and elemental iodine. Solvation of the noble metal occurs during agitation and heating of the slurry. The noble metal contents are removed from the noble metal pregnant solution by displacement onto a non-noble metal surface. The solid noble metal containing residue is treated with sufficient aqueous hydroxide solution to convert excess non-noble

metal into its water-soluble salt. The remaining insoluble material containing the noble metal recovered is rinsed to remove any remaining unreacted alkali and the soluble salts and is then digested with concentrated sulfuric acid to dissolve any remaining acid soluble impurities, the remaining acid insoluble residue is rinsed, dried and comprises substantially pure noble metal.

3,826,751

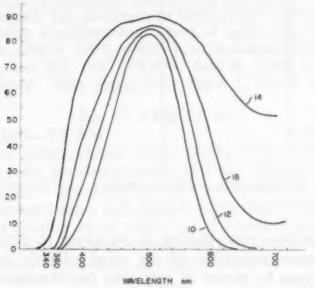
SELECTIVE OPTICAL FILTER AND METHOD OF MANUFACTURE

Norman U. Laliberte, Woodstock, Conn., assignor to American Optical Corporation, Southbridge, Mass.

Continuation of abandoned application Ser. No. 95,434, Dec. 7, 1970. This application Aug. 15, 1972, Ser. No. 280,936

The portion of the term of the patent subsequent to Dec. 21, 1988, has been disclaimed

Int. Cl. F21v *9/04*; G02b *5/12*; G02c *7/10*
U.S. Cl. 252—300 **7 Claims**



An improved high optical quality, plastic optical filter for red and near infrared wavelengths has very low transmittance in the red portion of the visible spectrum, a reduced near infrared transmittance, and a high abrasion resistance. The optical filter is formed by dissolving a sufficient quantity of cupric or cuprous chloride in a mixture of monopropylene glycol monomaleate, and allyl diglycol carbonate, mixing the solution with diisopropyl peroxydicarbonate initiator, filtering the resultant mixture, and casting the filtered mixture.

3,826,752

PROTECTIVE AGENTS AGAINST LIGHT RAYS

Jean Rody and Hanns Lind, Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application Mar. 8, 1971, Ser. No. 122,132, now Patent No. 3,749,732. Divided and this application Apr. 25, 1973, Ser. No. 354,402

Claims priority, application Switzerland, Mar. 11, 1970, 3,601/70

Int. Cl. F21v *9/06*; G02b *5/20, 7/10*
U.S. Cl. 252—300 **10 Claims**

New 2 - phenyl - 4 - (2',4' - dihydroxybenzoyl)-v-triazoles and ethers and esters of the 4'-hydroxy group thereof are used as protective agents against light rays for light-sensitive organic materials. They are prepared by dealkylating the corresponding 2-phenyl-(2',4'-loweralkoxybenzoyl)-v-triazoles and reacting the compounds obtained with alkylating agents or acylating agents.

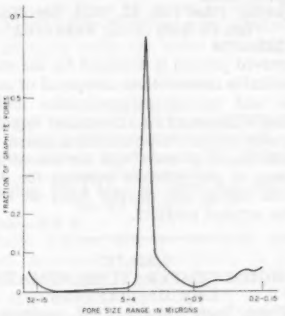
3,826,753

STABILIZED URANYL NITRATE COMPOSITIONS AND URANIUM IMPREGNATION METHOD

Robert E. Elson, Hayward, Raymond D. Heminger, Livermore, and Geoffrey R. Tully, Jr., Alamo, Calif., assignors to the United States of America as represented by the United States Atomic Energy Commission

Filed Oct. 24, 1958, Ser. No. 769,520

Int. Cl. C09k *3/00*
U.S. Cl. 252—301.1 R **14 Claims**



Stabilized tertiary butyl alcohol solution for impregnation of graphite with uranyl nitrate dihydrate.

3,826,754

CHEMICAL IMMOBILIZATION OF FISSION PRODUCTS REACTIVE WITH NUCLEAR REACTOR COMPONENTS

Leonard N. Grossman, Livermore, Alexis I. Kaznoff, Castro Valley, and Howard V. Clukey, Saratoga, Calif., assignors to General Electric Company

No Drawing. Filed June 16, 1971, Ser. No. 153,897

Int. Cl. G21c *3/62*
U.S. Cl. 252—301.1 R **30 Claims**

This invention teaches a method of immobilizing deleterious fission products produced in nuclear fuel materials during nuclear fission chain reactions through the use of additives. The additives are disposed with the nuclear fuel materials in controlled quantities to form new compositions preventing attack of reactor components, especially nuclear fuel clad, by the deleterious fission products.

3,826,755

PROCESS FOR PRECIPITATING METAL-CONTAINING COMPOUNDS AS GEL-PARTICLES DISPERSED IN AQUEOUS PHASE

John Herbert Grimes, Basingstoke, Kenneth Thomas Bartlett Scott, Reading, and Norman James McKenna, Tadley, England, assignors to United Kingdom Atomic Energy Authority, London, England

No Drawing. Filed Aug. 11, 1971, Ser. No. 170,994

Claims priority, application Great Britain, Aug. 26, 1970, 41,160/70

Int. Cl. B01j *13/00*; C09k *3/00*; G21c *19/42*
U.S. Cl. 252—301.1 S **13 Claims**

To a salt solution or hydrous sol of the metal or metals is added a polymer which is either a polysaccharide having a main chain of 1–6 linkages, or of 1–4 linkages with sub-

stituent groups having ether or ester linkages, e.g. guar gum, or a polyalcohol, e.g. polyvinyl alcohol, which complexes with the metal ions present. A precipitating reagent, e.g. an alkaline solution, is added gradually to the viscous mixture thus formed while agitating the mixture, resulting in the formation of a gel-particulate precipitate.

3,826,756

PROCESS FOR PREPARING DISCRETE PARTICLES OF MICROENCAPSULATED LIQUID ANAEROBIC COMPOSITIONS

Andrew G. Bachmann, Weatogue, and Gerald M. Litteral, Wethersfield, Conn., assignors to Loctite Corporation, Newington, Conn.

No Drawing. Filed Feb. 22, 1972, Ser. No. 228,285
Int. Cl. B01j *13/02*; B44d *1/02*
U.S. Cl. 252—316 18 Claims

An improved process is disclosed for the encapsulation of polymerizable compositions composed of acrylate ester monomers and peroxy polymerization initiators. The composition is dispersed in an aqueous liquid, following which a redox polymerization catalyst system is added to the aqueous liquid to coact with the peroxy polymerization initiator at the interface between the droplets and the aqueous liquid, and thereby form an encapsulating shell of the acrylate polymer.

3,826,757

ROOM TEMPERATURE NEMATIC LIQUID CRYSTALS

Shi-Yin Wong, Santa Monica, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

No Drawing. Filed Sept. 18, 1972, Ser. No. 290,197
Int. Cl. C09k *1/02*
U.S. Cl. 252—408 12 Claims

The present invention involves formulation of room temperature nematic liquid crystals involving compounds which are solid at room temperature, but when dissolved in certain solvents become true liquid crystals.

3,826,758

METHOD OF PREPARING EXHAUST CATALYST

Gordon H Hoffman, Towson, and Charles Philipp Brundrett, Baltimore, Md., assignors to W. R. Grace & Co., New York, N.Y.

No Drawing. Filed May 25, 1972, Ser. No. 256,922
Int. Cl. B01j *11/06, 11/40*
U.S. Cl. 252—455 R 5 Claims

The present invention is directed to an improved method of preparing catalytic systems containing copper oxide, chromic oxide, manganese dioxide, and palladium on a porous support. The method includes impregnating a support which may be activated alumina with aqueous copper dichromate solution, drying the impregnated support, impregnating the dried support with a manganese salt-palladium salt solution, drying the resulting catalyst system, and activating the catalyst by calcination. Catalysts prepared by this method are typically characterized with excellent crushing strength and improved resistance to shrinkage. The catalysts are especially useful for treating exhaust gases from internal combustion engines.

3,826,759

LOW-FOAMING DETERGENT COMPOSITIONS

Jack T. Inamorato, Westfield, and Robert E. Dickson, Belle Mead, N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Feb. 3, 1972, Ser. No. 223,322
Int. Cl. C11d *3/28, 3/06, 3/08*
U.S. Cl. 252—525 10 Claims

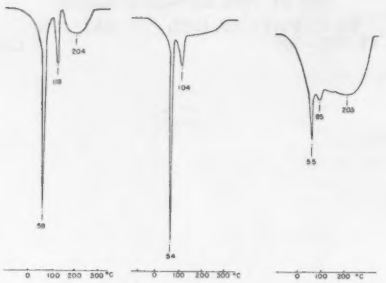
This invention relates to non-foaming detergent compositions which include nonionic detergent or a mixture of nonionic and anionic detergents, builder salt, and dialkyl melamine, the dialkylmelamine being present in sufficient proportion to make a combination of synthetic detergent(s) and builder non-foaming or essentially non-foaming in wash waters of usual dilutions for washing machine use. The compositions are effective laundering agents, primarily intended for use in automatic washing machines and in almost all practical uses are non-foaming, even when used in the normally foam generating horizontal tumbler type of machine.

3,826,760

THERMOPLASTIC PLASTIC COMPOSITION

Yasuhiro Takeshita, Michitake Uoi, Yoshiyuki Hirai, and Mitsuru Uchiyama, Chiba, Japan, assignors to Idemitsu Kosan Co., Ltd., Tokyo, Japan

Filed Dec. 22, 1971, Ser. No. 210,834
Claims priority, application Japan, Dec. 26, 1970, 45/128,474, 45/128,475; Sept. 29, 1971, 46/75,427, 46/75,428
Int. Cl. C08f *1/86, 3/16*; C08g *30/00*
U.S. Cl. 260—2 EP 7 Claims



Reversible cross-linking is imparted to polymers and copolymers especially of the vinyl, olefinic and olefinic oxide types by means of recurring dicyclopentadiene linkages. Difunctional dicyclopentadiene compounds can be polymerized directly into homopolymers or polymerized with comonomers to form copolymers. Alternatively, polymers carrying cyclopentadiene substituents can be prepared and the dimerization of the cyclopentadiene groups effected in situ to produce the cross-linkages. The dicyclopentadiene cross-linkages cleave on heating to a sufficient temperature so that the present polymers and copolymers have a thermoplastic character notwithstanding their normal cross-linked network structure.

3,826,761

METHOD OF SEPARATING CATION AND ANION EXCHANGE RESINS

James L. Short, Kenilworth, N.J., assignor to Ecodyne Corporation, Chicago, Ill.

Filed Mar. 1, 1972, Ser. No. 230,696
Int. Cl. B01d *15/06*; C02b *1/76*
U.S. Cl. 260—2.1 R 8 Claims

In the method described in U.S. Pat. No. 3,582,504, which is assigned to the assignee of this application, contaminant cation-exchange resin is separated from anion-exchange resin in a contaminant separation zone by delivering an intermediate-density liquid to the resin in an amount sufficient to permit the anion-exchange resin to float and the contaminant cation-exchange resin to sink. The intermediate-density liquid has a density between the densities of the anion and cation-exchange resins. In accordance with the present invention, the intermediate-density liquid is continuously delivered to the resin, and is intermittently withdrawn from a lower portion of the contaminant separation zone. The intermittent withdrawal of liquid produces high flow rates through the resin, and aids in releasing cation-exchange resin that may have been entrained in the bed.

3,826,762

NON-BURNING POLYURETHANE FOAM CONTAINING A NON-POROUS FILLER, A HALOGEN SOURCE, AND A PHOSPHORUS-CONTAINING COMPOUND

Kenneth Treadwell, Rahway, N.J., assignor to M & T Chemicals Inc., New York, N.Y.

No Drawing. Original application July 23, 1969, Ser. No. 844,179, now Patent No. 3,635,821. Divided and this application Feb. 17, 1971, Ser. No. 116,265

Int. Cl. C08g *22/44, 51/04, 51/54*

U.S. Cl. 260—2.5 AJ 5 Claims

A flame retardant system is provided for polyurethane foams comprising an inert filler, a halogen source and a phosphorus containing compound, and, also, urethane foam compositions containing the flame retardant systems. In addition, methods are provided for making the systems including coating the individual particles of the filler with a composition containing the halogen source, and thereafter adhering the phosphorus containing compound to the coated particles, and also, methods for making the flame retardant urethane foam compositions.

3,826,763

SUPER-STIFF POLYURETHANE FOAM

Roland J. Lamplugh, Aston, and Rocco P. Triolo, Broomall, Pa., assignors to Scott Paper Company

No Drawing. Continuation-in-part of application Ser. No. 53,328, July 8, 1970, which is a continuation-in-part of application Ser. No. 701,035, Jan. 8, 1968, both now abandoned. This application Sept. 1, 1972, Ser. No. 285,953

Int. Cl. C08g *22/44*

U.S. Cl. 260—2.5 AM 12 Claims

Flexible polyurethane foams having high load-bearing properties and improved tensile and tear strength are produced from a foamable polyurethane-forming reaction mixture comprising a high load-bearing imparting amount of a load-bearing agent which is a compound having one primary amino group bonded directly to an aromatic ring carbon atom, such as a compound having the formula

$$YANH_2 \qquad (I)$$

where A is phenylene, naphthalene, anthracene or phenanthrene; Y is the radical—R_n where n is zero or an integer of from 1 to 5 and R is selected from the group consisting of hydrogen, C_1–C_8 alkyl, phenyl, halogen, hydroxy, mercapto, nitro, carboxy, C_1–C_8 alkoxy, phenylalkyl wherein the alkyl portion contains from 1 to 3 carbon atoms, C_1–C_3 haloalkyl, C_1–C_3 hydroxyalkyl, C_1–C_3 mercaptoalkyl, C_1–C_3 nitroalkyl, and carboxyalkyl wherein the alkyl portion contains from 1 to 3 carbon atoms; provided that when R is hydroxy, alkoxy, or alkyl and is ortho to the amino group, then no other hydroxy, alkoxy or alkyl group may be ortho- or para- to said amino group.

3,826,764

FOAMED FIRE RESISTANT SELF EXTINGUISHING COMPOSITIONS CONTAINING A FLAME EXTINGUISHING MATERIAL RELEASING FLAME EXTINGUISHING GASES SUCH AS CO_2 OR N_2 WHEN SUBJECTED TO HIGH TEMPERATURES AND METHOD OF MAKING

Wilhelm G. Weber, 20 Genrenackerstrasse, 4133 Pratteln, Switzerland

No Drawing. Filed Dec. 13, 1972, Ser. No. 314,590

Claims priority, application Switzerland, Dec. 18, 1971, 18,597/71

Int. Cl. C08g *22/44, 51/56;* C09k *3/28*

U.S. Cl. 260—2.5 AJ 1 Claim

A method of preparing a semi-rigid light-weight foamed fire-resistant packaging and shock-absorbing construction material which is capable of evolving large volumes of fire extinguishing gases through the pores thereof when heated at high temperature in which a liquid polyether polyol, amine catalyst and surface active agents are mixed heated at high temperature in which a liquid polyether blowing agent e.g. cold liquid trichlortrifluoromethane which expands the polyurethane formed by polyolisocyanate reaction so that an open cell foam is developed when it is poured. The in situ polyurethane open cell foam before pouring is mixed therewith a flame extinguishing material which releases N_2 or CO_2 flame extinguishing gas when the foamed plastic is subjected to high temperature, and the flame extinguishing material may be used with an activating lead compound or an activating zinc compound, examples such as azo dicarbonamide, sodium bicarbonate, sodium sesquicarbonate, barium azo dicarboxylate or 4,4¹ bis (benzene sulfonyl-carbazide) which in the presence of activating lead compounds or zinc stabilizers serve to release copious quantities of flame extinguishing gases (CO_2 or N_2) at temperatures above 125° C., generally 160–180° C. Fillers such as chlorinated paraffin and antimony oxide are added to impart flame resistance.

3,826,765

PROCESS OF MAKING ANTILUMPING EXPANDABLE STYRENE POLYMERS

Timothy Altares, Jr., Valencia, Pa., assignor to Arco Polymers, Inc.

No Drawing. Filed May 10, 1973, Ser. No. 358,984

Int. Cl. C08j *1/26*

U.S. Cl. 260—2.5 B 2 Claims

Expandable styrene polymer particles are surface-coated with poly(methyl methacrylate) to prevent the particles from lumping together during expansion. The coating is applied by adding a mixture of 0.03–0.30 of poly(methyl methacrylate) and 0.01–1.5 parts of tricalcium phosphate to 100 parts of expandable polymer particles suspended in an aqueous medium.

3,826,766

SELF-EXTINGUISHING POLYMER COMPOSITIONS CONTAINING BROMINATED ARYL BUTANES

Hilda Howell and Walter M. Kutz, Pittsburgh, Pa., assignors to Koppers Company, Inc.

No Drawing. Filed Oct. 10, 1972, Ser. No. 296,166

Int. Cl. C08j *1/26*

U.S. Cl. 260—2.5 FP 12 Claims

Polymeric compositions are rendered self-extinguishing by incorporating therein from 0.1 to 15% by weight of a bromo-compound selected from 1,2,3,4-tetrabromo-1,4-diphenylbutane and p-phenylene - 1,1′ - bis(1,2,3,4-tetrabromo-4-phenylbutane).

3,826,767

ANIONIC DEXTRAN GRAFT COPOLYMERS

Merwin Frederick Hoover, Pittsburgh, Gloria Di Marco Sinkovitz, Bridgeville, and Raymond Joseph Schaper, Pittsburgh, Pa., assignors to Calgon Corporation, Pittsburgh, Pa.

No Drawing. Filed Jan. 26, 1972, Ser. No. 221,103

Int. Cl. C08b *25/04;* C08f *25/00*

U.S. Cl. 260—17.4 GC 5 Claims

Novel anionic graft copolymers of acrylamide and/or certain polymerizable anionic monomers grafted onto a dextran substrate are disclosed.

3,826,768

PROCESS FOR PREPARING POLYURETHANE COMPOSITIONS

Isamu Suzuki, Yasuji Nakahara, Kiyoshi Ichikawa, and Kaoru Osonoi, Fuji, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of abandoned application Ser. No. 872,835, Oct. 31, 1969. This application July 11, 1972, Ser. No. 270,731

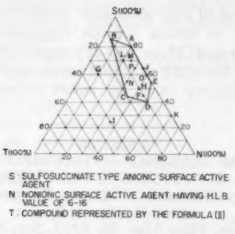
Claims priority, application Japan, Nov. 8, 1968, 43/81,274; Mar. 19, 1969, 44/20,399

Int. Cl. C08g *22/14, 51/24*

U.S. Cl. 260—29.2 TN 3 Claims

Process for preparing polyurethane compositions by dispersing a polyurethane containing isocyanate groups

made from polyols and an excessive molar amount of organic isocyanates in water of an amount at least half the amount of the polyurethane in the absence or presence of a water-soluble compound containing at least two primary or secondary amino groups per molecule, the said polyols containing a polyethylene ether moiety of a molecular weight from 600 to 2,500 in a weight ratio of the polyethylene ether moiety in the polyols represented by the equation (I) from 7.2–9 log $P/1000$ to $100P/(500+P)$ (percent by weight) wherein P is the molecular


S 100%
T 100%
N 100%
S SULFOSUCCINATE TYPE ANIONIC SURFACE ACTIVE AGENT
N NONIONIC SURFACE ACTIVE AGENT HAVING H.L.B. VALUE OF 6–16
T COMPOUND REPRESENTED BY THE FORMULA [I]

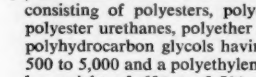
weight of a polyethylene ether moiety, said polyol being a member selected from the group consisting of

(a) a copolymeric polyol consisting of one polyethylene ether block and another block selected from the residues derived from the group consisting of polyesters, polyethers, polyester amides, polyester urethanes, polyether esters, polythioethers and polyhydrocarbon glycols, said polyethylene ether block having a molecular weight of 600 to 2,500 and said residue having a molecular weight of 500 to 5,000,

(b) a mixture of a copolymeric polyol under item (a) and another polyol selected from the group consisting of polyesters, polyethers, polyester amides, polyester urethanes, polyether esters, polythioethers and polyhydrocarbon glycols, said polyol having a molecular weight of 500 to 5,000, and

(c) a mixture wherein a member selected from the group consisting of polyesters, polyethers, polyester amides, polyester urethanes, polyether esters, polythioethers and polyhydrocarbon glycols having a molecular weight of 500 to 5,000 and a polyethylene glycol having a molecular weight of 600 to 2,500 are contained in a ratio represented by the equation [I],

and the dispersion being carried out in the presence of a combination of a sulfosuccinate type anionic surface active agent (S), a nonionic surface active agent having an H.L.B. value from 6 to 16 and being selected from the group consisting of a polyoxyethylene alkyl ether, a polyoxyethylene alkylphenol ether, a polyethylene glycol ether from higher alcohol and a fatty acid ester of polyethylene glycol, and a compound (T) represented by the formula



wherein X is a n-valent organic radical having a molecular weight from 500 to 5,000, said compound (T) being obtained by reacting a sultone with a low molecular polyol and treating the resulting addition product with alkali, Y is a monovalent alkali metal, m is an integer from 2 to 4 and n is an integer from 1 to 4, said compounds S, N and T being in a weight ratio within the limits encompassed by the line successively connecting the points

A (S=80, N=20, T=0)
B (S=85, N=5, T=10)
C (S=45, N=35, T=20)
D (S=40, N=50, T=10) and
E (S=55, N=45, T=0)

on the triangular coordinates (represented by percent by weight) of FIG. 2.

3,826,769

SELF-EMULSIFIED POLYURETHANES PREPARED BY DIRECT SULFONATION OF ISOCYANATE

Robert C. Carlson, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Application July 14, 1969, Ser. No. 841,570, which is a continuation-in-part of abandoned application Ser. No. 749,573, Aug. 2, 1968. Divided and this application Aug. 14, 1972, Ser. No. 280,239

Int. Cl. C08g 22/26

U.S. Cl. 260—29.2 TN **11 Claims**

The disclosed polymers are useful in self-emulsified polyurethane (including polyurethane-polyurea) latices formed by reacting an aromatic isocyanate-terminated polyurethane polymer with a strong sulfonating agent and chain extending the prepolymer with water, the chain extension being preferably subsequent to or simultaneous with a neutralization step.

3,826,770

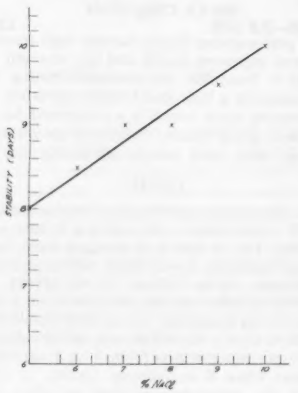
STABILIZED MIXTURE OF UREA FORMALDEHYDE AND METHYLOLUREAS

Ross Leon Christensen and Paul Robitschek, Eugene, Oreg., assignors to Chembond Corporation, Springfield, Oreg.

Filed Mar. 13, 1972, Ser. No. 234,030

Int. Cl. C08g 51/24

U.S. Cl. 260—29.4 R **2 Claims**



A method of making a storage stabilized aqueous solution of urea, formaldehyde, and nonpolymeric addition products thereof. The solution is stabilized to inhibit the crystallization of methylolureas by the inclusion of a dissolved, ionized, inorganic salt. A method of making a consolidated product from the stabilized solution is also disclosed.

3,826,771

STABLE HIGH SOLIDS WATER-IN-OIL EMULSIONS OF WATER SOLUBLE POLYMERS

Donald R. Anderson, Oswego, and Alvin J. Frisque, La Grange, Ill., assignors to Nalco Chemical Company, Chicago, Ill.

No Drawing. Continuation-in-part of application Ser. No. 320,012, Jan. 11, 1973, which is a continuation-in-part of application Ser. No. 161,967, July 12, 1971, now abandoned. This application Nov. 6, 1973, Ser. No. 413,405

Int. Cl. C08f 1/13

U.S. Cl. 260—29.6 H **14 Claims**

A water-in-oil emulsion which has a water-soluble vinyl addition polymer concentration between 20 and 50% by

weight based on emulsion which exhibits unusual stability properties.

3,826,772

ADHESIVE FOR BONDING ELASTOMERS TO METALLIC AND NONMETALLIC SUBSTRATES

Manfred Gebhard and Curt Nitzsche, Frankfurt am Main, and Simon Pfeffer, Messel, Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Germany

No Drawing. Filed Aug. 10, 1971, Ser. No. 170,626

Claims priority, application Germany, Aug. 22, 1970, P 20 41 769.0

Int. Cl. C08f *45/28, 45/30, 45/36*

U.S. Cl. 260—31.2 MR 5 Claims

A solvent-thinned adhesive for the bonding of rubber to metallic or nonmetallic substrates consisting essentially of halogenated elastomers or synthetic resins, a dioxime compound, an inorganic hexavalent chromium compound and an inorganic acid.

3,826,773

SILICONE COMPOSITION CONTAINING PRETREATED SILICA FILLER

Richard C. Cooke, Jr., Elnora, N.Y., assignor to General Electric Company

No Drawing. Continuation of abandoned application Ser. No. 167,822, July 30, 1971. This application Apr. 11, 1973, Ser. No. 350,007

Int. Cl. C08g *51/04;* C08k *1/02*

U.S. Cl. 260—37 SB 15 Claims

A composition containing a polysiloxane resin and a silica filler which has been pretreated by calcining for at least about one hour at a temperature of at least about 250° C., and/or by washing with an aqueous medium. The composition is particularly useful as a molding compound such as in the transfer molding of transistor housings.

3,826,774

RESINOUS COMPOSITIONS BASED ON POLYVINYLIDENE FLUORIDE

Edmond Demillecamps, Wavre, and Ghislain Danguy, Brussels, Belgium, assignors to Solvay & Cie, Brussels, Belgium

No Drawing. Filed Dec. 13, 1972, Ser. No. 314,664

Claims priority, application Luxembourg, Jan. 18, 1972, 64,603

Int. Cl. C08f *45/04*

U.S. Cl. 260—41 B 9 Claims

The invention relates to resinous compositions based on poly(vinylidene fluoride) comprising from 30 to 55% by weight of a polyamide of high molecular weight resulting from the polycondensation of terephthalic acid and at least one branched diamine containing 6 carbon atoms in its main chain.

The resinous compositions have higher impact strength than poly(vinylidene fluoride).

3,826,775

MODIFIED ALUMINA HYDRATE FLAME RETARDANT FILLER FOR POLYPROPYLENE

Igor Sobolev, Orinda, and Elias A. Woycheshin, Livermore, Calif., assignors to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

No Drawing. Filed June 21, 1973, Ser. No. 372,343

Int. Cl. C08f *45/04, 45/56*

U.S. Cl. 260—42.14 8 Claims

Flame retardancy is imparted to polypropylene by the incorporation of 40–70% by weight of modified alumina hydrate, the percentage being based on the filled polypropylene. The alumina hydrate is made compatible with polypropylene by addition of 0.2–5% by weight of an alkylketene dimer of the general formula

wherein R_1 and R_2 each have 14–20 carbon atoms.

3,826,776

BLOCK COPOLYMERS AND OXIDIZED CARBON BLACK COMPOSITIONS

Roy F. Wright, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Filed June 28, 1971, Ser. No. 157,764

Int. Cl. C08c *11/18;* C08f *19/08*

U.S. Cl. 260—42.14 6 Claims

A process for, and high green strength rubbery compositions resulting from, compounding block copolymers with filler materials, comprising: admixing oxidized carbon black with thermoplastic elastomers selected from linear block copolymers and branched block copolymers wherein the copolymers have at least two resinous terminal polymer blocks and an elastomeric central block.

3,826,777

FLAME RETARDANT DIALLYLIC PHTHALATE MOLDING COMPOUNDS

James Larue Thomas, Hamilton Square, N.J., and Harry Hoyt Beacham, Langhorne, Pa., assignors to FMC Corporation, New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 182,853, Sept. 22, 1971. This application Aug. 11, 1972, Ser. No. 279,878

Int. Cl. C08g *51/04*

US. Cl. 260—42.18 6 Claims

Flame retardant diallylic phthalate molding compounds with such greatly improved thermal stability that they do not release corrosive gases during exposure to temperatures of 200° C. and above, in a sealed environment, are obtained by the use of hexabromobiphenyl in amounts of 0.5 to 20% together with 5 to 60% alumina trihydrate as synergist for the hexabromobiphenyl based on the allylic polymer. These novel compositions can contain reinforcing fibers, fillers, polymerization initiators, release agents, colorants, glass coupling agents, inhibitors and other incidental additives conventionally used in thermosetting molding compounds. Allylic monomers are not required in the compositions of this invention.

3,826,778

TOOTH FILLING AND FACING COMPOSITIONS COMPRISING A RADIOPAQUE GLASS AND METHOD OF MAKING THE SAME

Earl D. Dietz, Toledo, Ohio, assignor to Owens-Illinois, Inc.

Original application Feb. 17, 1970, Ser. No. 12,109. Divided and this application June 30, 1971, Ser. No. 158,546

Int. Cl. C08f *45/04;* C09k *3/00*

U.S. Cl. 260—42.47 17 Claims

A filler composition for tooth filling and facing compositions comprising (1) a finely divided inorganic material, and (2) a barium aluminosilicate glass or other glass having an effective amount of radiopaque oxide that renders the resultant glass radiopaque to X-rays used by dentists. The filler composition is mixed with an organic polymer such as methyl methacrylate to provide a tooth filling and facing composition having an outstanding combination of desirable properties including a color resembling that of natural teeth, a suitable index of refraction, hardness,

wear resistance, a relatively low thermal expansion matching that of natural teeth, and being radiopaque to X-rays used by dentists.

3,826,779
ANTIOXIDANTS

Brian Thomas Ashworth, Kenneth Crawford, and Peter Michael Quan, Manchester, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Feb. 18, 1972, Ser. No. 227,652
Int. Cl. C08g *45/60, 51/60*
U.S. Cl. 260—45.9 R **6 Claims**

Acyl derivatives of p-nitrosophenols, p-nitrosoanilines and p-nitrosophenylhydroxylamines are antioxidants for rubber which are resistant to extraction by solvents. The acyl derivatives are preferably prepared by acylation at 10–40° C. in a water-miscible solvent, best in admixture, in presence of a weakly basic acid binding agent.

3,826,780
COLOR IMPROVEMENT IN STABILIZED POLYOLEFIN RESINS

Kornel D. Kiss, Yonkers, N.Y., and Jan E. Vandegaer, Wayne, N.J., assignors to Dart Industries Inc., Los Angeles, Calif.

No Drawing. Filed Apr. 9, 1973, Ser. No. 349,595
Int. Cl. C08f *45/58*
U.S. Cl. 260—45.85 B **12 Claims**

Polyolefin compositions containing trace quantities of multivalent metal residues, which compositions are relatively free of color when stabilized with phenolic or benzophenone type stabilizers are obtained by oxidizing said metal residues in the polyolefin to their highest valency state at temperatures where no significant degradation of the polymer occurs.

3,826,781
PRIMARY INSULATION FOR WATERPROOFED CABLE

Robert J. Turbett, Millington, N.J., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Dec. 4, 1972, Ser. No. 312,033
Int. Cl. C08f *45/58*
U.S. Cl. 260—45.85 S **9 Claims**

Composition comprising:

ethylene polymer having a density of about 0.928 to 0.955,

copper deactivating amounts of at least one organic compound which is an oxalyl dihydrazide, and

antioxidant effective quantities of at least one organic compound having a molecular weight of $\geq$550 and which contains 2 or 3 hindered phenolic groups per molecule thereof.

The composition is useful as primary insulation for copper conductors which are used in wire and cable which contain waterproofing filler and which is used under elevated temperature conditions.

3,826,782
ROOM TEMPERATURE CURABLE ORGANOPOLYSILOXANES

Guenther Fritz Lengnick, Adrian, Mich., assignor to Stauffer Chemical Company, Westport, Conn.

No Drawing. Continuation-in-part of abandoned application Ser. No. 270,368, July 10, 1972. This application June 8, 1973, Ser. No. 368,427
Int. Cl. C08f *11/04*
U.S. Cl. 260—46.5 E **3 Claims**

The invention relates to curable one-component organopolysiloxanes obtained from the reaction of a hydroxyl-terminated organopolysiloxane and the novel disilane cross-linking agents having functional groups which are hydrolyzable in ambient moisture.

3,826,783
POLYQUINAZOLINES AND THEIR METHOD OF MANUFACTURE

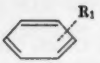
Bertrand M. Bloch, Paris, France, assignor to Office National d'Etudes et de Recherches Aerospatiales

No Drawing. Filed Nov. 19, 1970, Ser. No. 91,161
Claims priority, application France, Nov. 21, 1969, 6940059
Int. Cl. C08g *33/02*
U.S. Cl. 260—47 CZ **23 Claims**

The polyquinazolines contain in their chains quinazoline nuclei of the formula:

in which

is a



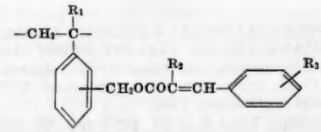
nucleus. R_1 is hydrogen or one of several lower alkyl substituents, lower alkoxyl or halogen at one or several of the free positions on the ring. These quinazoline nuclei are linked, either at their 2-positions through a direct linkage or an arylene group and at their 4-positions through an arylene, alkylene or alkylarylene group; or at their 2-positions through an arylene group and at one of their 5-, 6-, 7- and 8-positions, through a direct linkage or a short chain or heteratomic bivalent radical, such as —CH_2—, —CO—, —O—, —SO_2—, —S—; the quinazoline nuclei of the polyquinazolines thus obtained bearing an aliphatic or aromatic radical P, at their 4-positions, or at their 4-positions through a direct linkage or through an arylene, alkylene or aralkylene group and at one of their 5-, 6-, 7-, 8-positions, directly or through a short chain or heteratomic bivalent radical, such as —CH_2—, —CO—, —O—, —SO_2— or —S—; the quinazoline nuclei of the polyquinazolines then obtained bearing an aromatic radical Q at their 2-positions.

3,826,784
NOVEL REACTIVE CINNAMATE POLYMERS

Masato Satomura, Saitama, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed July 6, 1973, Ser. No. 377,006
Claims priority, application Japan, Aug. 18, 1972, 47/82,117
Int. Cl. C08f *3/62, 15/02, 15/16*
U.S. Cl. 260—47 UA **9 Claims**

Reactive polymers having monomer units represented by the following general formula:



(I)

wherein R_1 represents a hydrogen atom or an alkyl group having not more than 2 carbon atoms, R_2 represents a hydrogen atom, cyano group, or a carbamoyl group, and R_3 represents a hydrogen atom, a halogen atom, a nitro group, an acyl group or an alkoxy, e.g., methoxy group.

3,826,785

ANIONIC LACTAM POLYMERIZATION PROCESS USING AN O—C≡N CONTAINING ACTIVATOR

Philippe Bruant, Billere, France, assignor to Societe Anonyme dite: Aquitaine Total Organico, Courbevole, France

No Drawing. Filed June 26, 1972, Ser. No. 266,051
Int. Cl. C08g 20/18
U.S. Cl. 260—78 L 13 Claims

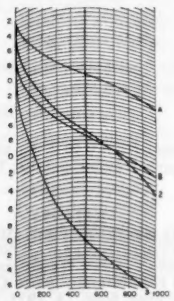
This invention concerns a process for the anionic polymerization of lactams, using a new category of activators which allow the speed of polymerization to be properly controlled.

3,826,786

POLYMERIZATION CONTROLLED DIALLYLIC PHTHALATE POLYMER COMPOSITIONS

Carl Leonard Wright, Pasadena, and Harry Hoyt Beacham, Severna Park, Md., assignors to FMC Corporation, New York, N.Y.

Continuation-in-part of abandoned application Ser. No. 101,004, Dec. 23, 1970. This application May 26, 1972, Ser. No. 257,439
Int. Cl. C08f 3/58
U.S. Cl. 260—78.4 UA 4 Claims



Diallylic phthalate prepolymer compositions whose polymerization is controlled, and which compositions may contain polyphenylene ether polymers, are prepared by incorporating in the compositions 0.01 to 1.5% by weight of anthracene, based on the total polymerizable materials.

3,826,787

REGULAR ALTERNATING COPOLYMERS OF STYRENE AND IMIDAZOLINES AND THEIR DERIVATIVES

Richard Carl Capozza, Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Sept. 21, 1973, Ser. No. 399,673
Int. Cl. C02b 1/20; C08f 15/02
U.S. Cl. 260—85.5 R 7 Claims

Completely alternating (1:1) copolymers of styrene and various imidazolines, their salt derivatives and methods of treating aqueous suspensions of water-insoluble, solid materials therewith, are disclosed.

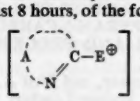
3,826,788

PROCESS FOR CROSSLINKING HYDROPHILIC COLLOIDS USING TRIAZINE DERIVATIVES

Alfred Froehlich, Marly-le-Grand, Paul Tschopp, Marly, and Werner Deuschel, Villars-sur-Glane, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Mar. 28, 1972, Ser. No. 238,896
Claims priority, application Switzerland, Apr. 5, 1971, 5,019/71
Int. Cl. C08f 3/34; C08h 1/06; C09h 7/00
U.S. Cl. 260—91.3 VA 12 Claims

A process for crosslinking hydrophilic colloids, which comprises performing the crosslinking with a compound having a half-life for decomposition in aqueous solution at 40° C. of at least 8 hours, of the formula



wherein

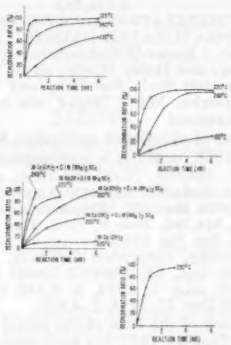
is a certain organic radical, $E^{\oplus}$ is an anion radical and $X^{\ominus}$ is an anion as well as a photographic material containing a colloid layer crosslinked with said compounds, are described.

3,826,789

PROCESS FOR PRODUCING HYDROCARBON COMPOSITION

Chikao Yokokawa, Kyoto, Japan, assignor to The Fujikura Cable Works Ltd., Tokyo, Japan

Filed Dec. 8, 1972, Ser. No. 313,383
Claims priority, application Japan, Dec. 9, 1971, 46/100,039
Int. Cl. C08f 27/02
U.S. Cl. 260—92.8 A 10 Claims



A process for producing an hydrocarbon compound from polyvinyl chloride by heating the polyvinyl chloride in an aqueous solution of a basic inorganic material to release chlorine contained in the polyvinyl chloride into said aqueous solution as chlorine ions, to thereby obtain an organic high molecular weight polymeric material mainly comprising carbon, hydrogen and oxygen, is disclosed.

3,826,790

SOLUTION POLYMERIZATION PROCESS

Servaas van der Ven, 252 Evesham Road, Cherry Hill, N.J. 08003

No Drawing. Filed Sept. 25, 1972, Ser. No. 292,027
Claims priority, application Netherlands, Jan. 21, 1972, 7200923
Int. Cl. C08d 1/20, 3/04, 3/08
U.S. Cl. 260—94.2 M 5 Claims

A process for the polymerization of conjugated dienes optionally with monovinyl aromatic hydrocarbons to polymers having increased cis 1,4 content, which comprises polymerizing at least one conjugated diene in the presence of an initiator formed by reacting a hydrocarbon soluble lithium alkyl and a hydrocarbon soluble trihydrocarbyl boron compound in the presence of at least one conjugated diene or monovinyl hydrocarbon and maintaining during polymerization the ratio of boron to lithium of at least 0.5.

3,826,791

HETEROCYCLIC AMIDES OF 4-HYDROXY-2H-1-BENZOTHIOPYRAN-3-CARBOXYLIC ACID 1,1 - DIOXIDE AND PROCESS FOR THEIR PRODUCTION

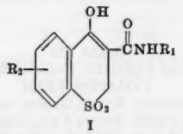
Harold Zinnes, Rockaway, and Neil A. Lindo, Chatham, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Original application Apr. 28, 1972, Ser. No. 248,509, now Patent No. 3,769,292, dated Oct. 30, 1972. Divided and this application Apr. 9, 1973, Ser. No. 349,354

Int. Cl. C07d *31/50*

U.S. Cl. 260—294.8 C 2 Claims

Compounds of the formula:



I

wherein R_1 is an aromatic heterocyclic group and R_2 is hydrogen, alkyl, aralkyl, alkoxy, halogen, cyano, nitro, trifluoromethyl, etc., are disclosed. These compounds are useful as anti-inflammatory agents.

3,826,792

POLYMERIZATION OF ETHYLENICALLY UNSATURATED HYDROCARBONS

Karl Ziegler, 1 Kaiser-Wilhelm-Platz, Heinz Breil, Erhard Holzkamp, and Heinz Martin, all of Mulheim (Ruhr), Germany; said Breil, Holzkamp and Martin assignors to said Ziegler, Maria Ziegler sole heir of said Karl Ziegler, deceased

Continuation of abandoned application Ser. No. 745,998, July 1, 1958, which is a continuation of applications Ser. No. 469,059, Nov. 15, 1954, now Patent No. 3,257,332, Ser. No. 527,413, Aug. 9, 1955, and Ser. No. 554,631, Dec. 22, 1955, both now abandoned and Ser. No. 514,068, June 8, 1955. This application Mar. 17, 1971, Ser. No. 125,151

Claims priority, application Germany, Nov. 17, 1953, Z 3,799; Dec. 15, 1953, Z 3,862; Dec. 23, 1953, Z 3,882; Aug. 3, 1954, Z 4,348; Aug. 16, 1954, Z 4,375; Dec. 27, 1954, Z 4,629

The portion of the term of the patent subsequent to June 21, 1983, has been disclaimed

Int. Cl. C08f *1/42, 3/06, 15/04*

U.S. Cl. 260—94.9 B 32 Claims

A process for the polymerization of ethylenically unsaturated hydrocarbons, comprising the contacting of such hydrocarbons with a catalyst formed by mixing aluminum trihydrocarbons (with the hydrocarbons being either alkyl or aryl radicals) with a heavy metal compound (for example a salt, a freshly precipitated oxide or an hydroxide) of the metals of Groups IV–B, V–B and VI–B of the Periodic System, including thorium and uranium.

3,826,793

ANTICOAGULANT PEPTIDES RELATED TO FIBRINO PEPTIDES

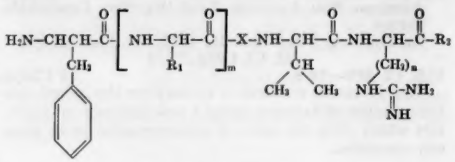
Gustav Erik Birger Blomback and Margareta Blomback, Stockholm, Per Ingemar Olsson, Vallingby, Lars-Gundro Svendsen and Bo Thuresson Af Ekenstam, Molndal, and Karl Goran Claeson, Vastra Frolunda, Sweden, assignors to Aktiebolaget Bofors, Bofors, Sweden

No Drawing. Continuation-in-part of abandoned application Ser. No. 769,370, Oct. 21, 1968. This application Sept. 10, 1970, Ser. No. 71,219

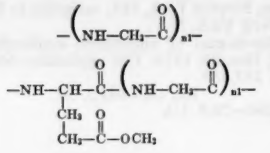
Int. Cl. C07c *103/52*

U.S. Cl. 260—112.5 1 Claim

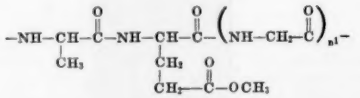
Polypeptides of natural amino acids having three to nine amino acids exhibit strong effects in reducing coagulation of the blood. The polypeptides exhibit principally antithrombopolastic activity and in addition show some antithrombin and fibrinolytic activities. One amino acid end of the polypeptide is phenylalanine and the other is preferably arginine.



in which the optically active amino acids are of the L-configuration, and R_1 is isobutyl, sec-butyl or benzyl, m is 0 or 1, X is



or



n_1 being an integer from 0 to 3, R_2 an alkoxy group having up to eight carbon atoms, and n is 3.

3,826,794

PROTECTED DECAPEPTIDE DERIVATIVES OF GONADOTROPIN RELEASING HORMONE

George Rogelio Flouret, Waukegan, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

No Drawing. Filed Sept. 13, 1971, Ser. No. 180,160

Int. Cl. C07c *103/52;* C07g *7/00*

U.S. Cl. 260—112.5 6 Claims

The synthesis of the protected decapeptide pyro-Glu-His-Trp-Ser-Tyr-Gly-Leu-Arg-Pro-Gly-amide from the corresponding nonapeptide carrying easily removable protective groups is described. The decapeptide, upon removal of its protective groups, is identical with the gonadotropin-releasing hormone.

3,826,795

PROCESS FOR EXTRACTING A PROTEINACEOUS SWEETENING AGENT FROM *DIOSCOREOPHYLLUM CUMMINSII* BERRIES EMPLOYING HIGH SPEED HOMOGENIZATION AND U.V. IRRADIATION

Okon A. Essiet, 2615 SE. 18th Ave., Portland, Oreg. 97202

Continuation-in-part of application Ser. No. 40,185, May 25, 1970, now Patent No. 3,687,693. This application July 10, 1972, Ser. No. 269,947

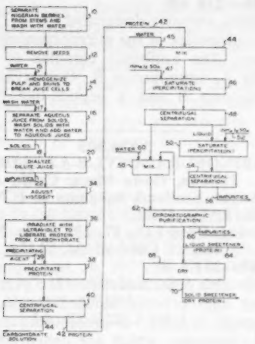
The portion of the term of the patent subsequent to Aug. 29, 1989, has been disclaimed

Int. Cl. A23j *1/14;* A23l *1/26*

U.S. Cl. 260—112 R 11 Claims

A valuable water soluble sweetening material which is many times sweeter than sucrose is recovered from the berries of the *Dioscoreophyllum cumminsii* vine, which is indigenous to Africa. The sweetening material material is a protein having a molecular weight of the order of 90,000 which is present as part of a carbohydrate-protein complex having a molecular weight of the order of 100,000. This complex is recovered in aqueous solution by steps including first removing the single seeds of the berries, homogenizing the remaining pulp and skin in the

presence of added water and separating a diluted juice from the solid material by filtration or centrifugation or a combination of both including washing the separated solid material with water and adding the water to the separated juice. The resulting aqueous material is optionally dialyzed in cellophane bags suspended in substantially pure water to remove impurities having molecular weight below approximately 10,000. This liquid can be further treated to liberate the carbohydrate from the protein and to then precipitate and centrifugally separate the precipitated protein. The separated protein can be further purified by a series of steps involving precipitation from water



solution by saturation with dry ammonium sulfate followed by chromatographic purification to produce a sweetener liquid. The sweetener liquids can have water evaporated therefrom by freeze drying to produce a crystalline water soluble powder or by heating in shallow pans to a temperature below about 55° C. under vacuum conditions to produce a dry cake which can be easily ground into a water soluble powder. The sweetener liquid can be further stabilized by adding a small amount of methylparaben to produce a liquid sweetener product, and the solid sweeteners can be further stabilized by adding a small amount of sodium chloride to produce solid sweetener product.

3,826,796

p-GLU-HIS-LEU-ARG-PRO-GLY-NH_2 AND INTERMEDIATES

Dimitrios Sarantakis, Audubon, William H. McGregor, Malvern, and Wayne A. McKinley, Wallingford, Pa., assignors to American Home Products Corporation, New York, N.Y.

No Drawing. Filed Dec. 20, 1972, Ser. No. 317,042

Int. Cl. A61k *27/00;* **C07c** *103/52;* **C07g** *7/00*

U.S. Cl. 260—112.5 **3 Claims**

The novel hexapeptide p-Glu-His-Leu-Arg-Pro-Gly-NH_2 and intermediates used in the synthesis thereof are described. This hexapeptide inhibits the release of luteinizing hormone.

3,826,797

DISPERSANT ADDITIVES CONTAINING PHOSPHORUS, SULFUR AND NITROGEN

Stanley J. Brois, Englishtown, N.J., assignor to Esso Research and Engineering Company

No Drawing. Filed Mar. 24, 1972, Ser. No. 237,985

Int. Cl. C07g *17/00;* **C10m** *1/48*

U.S. Cl. 260—125 **13 Claims**

To prepare additives for fuel and lubricant compositions, phosphosulfurized hydrocarbons are reacted with aziridine compounds. The reaction products are particularly useful for imparting dispersancy to lubricant compositions. A representative dispersant is prepared by reacting polyisobutylene with phosphorus pentasulfide and then reacting the resulting phosphosulfurized polyisobutylene with ethylenimine. The products can be modified by further reaction with metal alcoholates or metal salts of fatty acids such as zinc acetate.

3,826,798

PHOSPHOSULFURIZED HYDROCARBON POLYMER STABILIZED WITH 2,5-BIS(ALKYLDITHIO)-1,3,4-THIADIAZOLE

John H. Udelhofen, Wheaton, Roger W. Watson, Batavia, and Adam S. Kurasiewicz, Wheaton, Ill., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Oct. 13, 1972, Ser. No. 297,379

Int. Cl. C07g *17/00*

U.S. Cl 260—139 **9 Claims**

Oleaginous crankcase lubricants containing phosphosulfurized hydrocarbon polymer resist deterioration during in-service use for internal combustion engine lubrication but the pungent, obnoxious odor and continual hydrogen sulfide evolution characteristic of such phosphosulfurized hydrocarbon during such use have prevented use of said oleaginous crankcase lubricants. Said odor and instability of such phosphosulfurized hydrocarbon are improved by adding thereto a minor amount of 2,5-bis(alkyldithio)-1,3,4-thiadiazole and the resulting composition provides inhibition to bearing metal corrosion and oxidative thickening of oleaginous crankcase lubricants.

3,826,799

COPPER CONTAINING AZO TRIAZINE COMPOUNDS

David Richard Waring, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Aug. 11, 1972, Ser. No. 279,788

Int. Cl. C09b *45/48*

U.S. Cl. 260—146 T **4 Claims**

Cellulose-reactive dyestuffs, providing usually green or brown shades of excellent fastness to light, washing and bleach treatments and providing a high level of fixation from alkaline, saline dyebaths are obtained by condensing togeher cyanuric chloride (2 moles) with one mole of a phenylene diamine sulphonic acid, one mole of a 1:1 copper complex aminoazo compound and one mole of nitroaminostilbene disulphonic acid or an amino monoazo compound of the formula

$$NHR_2—R_3—N=N—R_4$$

where

R_2 represents H or CH_3,

R_3 represents a 1,4-naphthylene radical which may be substituted by SO_3H and/or OCH_3, or a 1,4-phenylene radical which may be substituted by CH_3, OCH_3, Cl, CO_2H, SO_3H, $NHCONH_2$ or $NHCOR_5$ where R_5 is H or an alkyl group of 1 to 3 carbon atoms, and

R_4 represents a sulphonaphthyl radical or a mono- or dicyclic radical of the benzene series which contains at least one SO_3H group and which may be further substituted.

The condensations are carried out in such a manner as to provide a product of the formula:

$$Me—Tr—Bz—Tr—Az$$

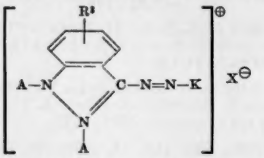
where Tr are each monochlorotriazine residues, Bz is the residue of the phenylene diamine disulphonic acid and Me and Az are respectively the residues of the metal complex and the monoazo compounds.

3,826,800
BASIC INDAZOLE AZO COMPOUNDS

Johannes Dehnert and Guenter Dunkelmann, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing Filed Sept. 7, 1971, Ser. No. 178,384
Int. Cl. C09b *43/00*
U.S. Cl. 260—147 **4 Claims**

Basic dyes of the indazole series of the formula

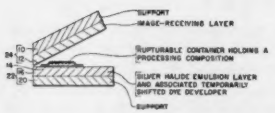


wherein A is methyl, ethyl or a hydroxyethyl group which may be further substituted with the proviso that not more than one A is methyl or ethyl, R^3 is hydrogen, methyl, methoxy, chloro, nitro or SO_2R where R is an amino radical, or an alkyl or aryl radical, K is a nitrogeneous coupling component which completes the dye molecule to form a diazacyanine system and $X^{\ominus}$ is a colorless acid anion. The orange to blue dyes have excellent fastness properties and are suitable for dyeing anionically modified textile fibers, particularly acrylonitrile polymers and polyesters.

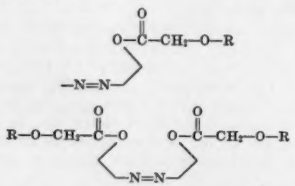
3,826,801
NOVEL PHOTOGRAPHIC PRODUCTS AND PROCESSES

Ronald F. W. Cieciuch, Boston, and Myron S. Simon, Newton Centre, Mass., assignors to Polaroid Corporation, Cambridge, Mass.

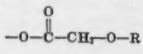
Original application Aug. 30, 1968, Ser. No. 756,481, now Patent No. 3,579,334. Divided and this application Nov. 19, 1970, Ser. No. 91,207
Int. Cl. C09b *29/10*
U.S. Cl. 260—202 **6 Claims**


SUPPORT
IMAGE-RECEIVING LAYER
RUPTURABLE CONTAINER HOLDING A PROCESSING COMPOSITION
SILVER HALIDE EMULSION LAYER AND ASSOCIATED TEMPORARILY SHIFTED DYE DEVELOPER
SUPPORT

Transfer images in color are formed by exposing a photosensitive element containing a silver halide emulsion and a mono or disazo dye which contains not less than one or more than two groups selected from the group represented by the formulae



wherein R is a lower alkyl group, said dyes also containing not less than one nor more than two dihydroxyphenyl silver halide developing radicals; permeating the photosensitive element with an aqueous alkaline processing composition, and deacylation of the



groups by hydrolysis to provide hydroxyl groups, thereby providing a non-reversible bathochromic shift of the spectral absorption characteristics of dye; immobilizing the dye as a result of the development of the exposed areas of the emulsion; and transferring, by diffusion, at least a portion of the imagewise distribution of dyes to a superposed image receiving layer to provide a positive dye image therein.

3,826,802
4'-DEOXYAMBUTYROSIN A AND B

Hiroshi Kawaguchi, Tokyo, Kei-Ichi Fujisawa, Kamifukuoka, Hiroshi Tsukiura, Tokyo, and Masataka Konishi, Yokohama, Japan, assignors to Bristol-Myers Company, New York, N.Y.

No Drawing. Filed Sept. 13, 1972, Ser. No. 288,623
Int. Cl. A61k *21/00;* **C07c** *129/18*
U.S. Cl. 260—210 AB **12 Claims**

An antibiotic complex designated Bu–1975 is fermented from three subspecies of the microorganism named *Bacillus circulans*. The antibiotic complex is comprised of ambutyrosin A, ambutyrosin B, 4'-deoxyambutyrosin A, 4'-deoxybutyrosin B and a peptide-like fraction designated B.

3,826,803
ARABINOFURANOSYL-8-AZAADENINES

Richard L. Tolman, Costa Mesa, Calif., and Clive W. Smith, Angus, Scotland, assignors to ICN Pharmaceuticals, Inc., Irvine, Calif.

No Drawing. Filed Feb. 17, 1972, Ser. No. 209,352
Int. Cl. C07d *95/04, 51/54*
U.S. Cl. 260—211.5 R **15 Claims**

Arabinofuranosyl-8-azaadenines are prepared by, e.g., ring closing appropriately blocked 1-azido sugars with cyanoacetamide to form 1-*D*-arabinofuranosyl-5-amino-4-carbamoyl-*v*-triazoles, which are dehydrated to the corresponding nitriles and cyclized to yield the nucleosides of interest. 9-α-*D*-Arabinofuranosyl-8-azaadenine, alone or in the form of its 5'-phosphate, is deaminase resistant and active against vaccinia and herpes simplex viruses. The corresponding β anomer may be expected to serve as a purine nucleoside antagonist (as a substrate for one or both of DNA polymerase or ribonucleotide reductase) and its precursor 1-β-*D*-arabinofuranosyl-5-amino-4-carbamoyl-*v*-triazole to regulate purine metabolism and inhibit *de novo* purine biosynthesis.

3,826,804
ALIPHATIC SUBSTITUTED 2,4-DIENE ACIDS AND ESTERS

Clive A. Henrick and John B. Siddall, Palo Alto, Calif., assignors to Zoecon Corporation, Palo Alto, Calif.

No Drawing. Continuation-in-part of application Ser. No. 201,189, Nov. 22, 1971, which is a continuation-in-part of application Ser. No. 191,812, Oct. 22, 1971, both now abandoned. This application May 24, 1972, Ser. No. 256,605
Int. Cl. C08h *3/00*
U.S. Cl. 260—399 **24 Claims**

Aliphatic di-unsaturated esters and acids, and derivatives thereof, substituted with thiol (mercapto) or hydrocarbon thio group useful for the control of insects.

3,826,805
FLAME RETARDANT POLYESTERS BASED ON CYCLOHEXENE DIMETHANOL

Lowell R. Comstock, South Charleston, and Percy L. Smith, Dunbar, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed June 6, 1972, Ser. No. 260,199
Int. Cl. C08f *21/02;* **C08g** *17/10, 17/12*
U.S. Cl. 260—869 **16 Claims**

This invention relates to brominated, unsaturated polyesters, based on cyclohexene dimethanol and an unsatu-

rated polycarboxylic acid or anhydride thereof, which possess excellent flame-retardant properties, relatively high heat distortion temperatures and are resistant to discoloration at temperatures normally encountered in molding cycles. The polyesters of this invention can be molded into aesthetically attractive, thermoset articles characterized by excellent dimensional stability.

3,826,806

FLAME RETARDANT POLYESTERS FROM BROMINATED DIOLS

Lowell R. Comstock, South Charleston, and Percy L. Smith, Dunbar, W. Va., assignors to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed June 6, 1972, Ser. No. 260,200
Int. Cl. C08f 21/02; C08g 17/10, 17/12
U.S. Cl. 260—869 **28 Claims**

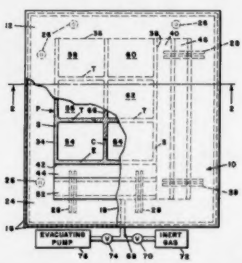
This invention relates to brominated, unsaturated polyesters, based on a brominated diol and an unsaturated polycarboxylic acid or anhydride thereof, which are substantially free of dibrominated diol moieties, contain bromine end groups and possess excellent flame-retardant properties, excellent thermal stability and can be used in molding applications to form aesthetically attractive articles characterized by excellent chemical, physical and electrical properties.

3,826,807

METHOD OF DIFFUSION MOLDING

Eugene D. Green, La Mesa, Calif., assignor to General Dynamics Corporation, San Diego, Calif.

Original application Sept. 30, 1971, Ser. No. 185,111, now Patent No. 3,743,455. Divided and this application Jan. 30, 1973, Ser. No. 327,895
Int. Cl. B22f 3/04
U.S. Cl. 264—39 **5 Claims**



The method of diffusion molding cubically-shaped metal granules into a workpiece comprises cleaning the granules, depositing them into the cavity of a tooling mold, vibrating the tooling mold to orient the interfaces of the cubical granules into alignment with one another, encapsulating the tooling mold in a sealed enclosure, evacuating the enclosure, applying heat and pressure to the enclosure to effect diffusion molding of the granules into a workpiece configuration, and removing the workpiece from the enclosure and reusable tooling mold.

3,826,808

PROCESS FOR RECOVERING TUNGSTEN FROM ALKALINE BRINE

Ivan L. Nichols and Raymond O. Dannenberg, Salt Lake City, Utah, assignors to the United States of America as represented by the Secretary of the Interior

No Drawing. Filed Aug. 2, 1973, Ser. No. 385,214
In. Cl. C01g 41/00
U.S. Cl. 423—54 **4 Claims**

Tungstate ion in alkaline brine is complexed with a dihydroxy phenolic compound prior to extraction with an organic solvent or a resin.

3,826,809

LEACHING OF METAL VALUES FROM VARIOUS ORES

Bruce Alfred Hardwick and John Howard Patterson, East Roseville, New South Wales, Australia, assignors to The Oil Shale Corporation (Australia)

No Drawing Filed Sept. 15, 1972, Ser. No. 289,468
Claims priority, application Australia, Oct. 7, 1971, 6,562/71
Int. Cl. C01g 31/00, 39/00
U.S. Cl. 423—61 **4 Claims**

In a method of recovering vanadium or molybdenum metal values from the ash of a roasted ore by leaching an aqueous slurry thereof with a water soluble reagent of the carbonate/bicarbonate type, the improvement comprising first maintaining the slurry in the presence of free lime for a sufficient period at a selected temperature to condition the ash, thereby significantly increasing the recovery of metal values therefrom in the subsequent leaching step. Typically, the slurry is conditioned for a period of about ½ day at a temperature of about 80° C. Since calcium carbonate is decomposed readily by roasting into free lime, the invention is very conveniently applicable to ores containing a high content of calcium carbonate.

3,826,810

EMISSION CONTROL SYSTEM

Alexander Lawson, Mississauga, Ontario, Canada, assignor to Ontario Research Foundation, Sheridan Park, Ontario, Canada

Filed May 8, 1972, Ser. No. 251,457
Claims priority, application Great Britain, Sept. 21, 1971, 44,043/71
Int. Cl. B01d 53/34
U.S. Cl. 423—212 **24 Claims**

NO_x levels in gas streams, especially automotive vehicle internal combustion engine exhausts, are reduced by contacting the gas stream with a catalyst in the presence of moisture and oxygen at a temperature below 200° C.

3,826,811

SULPHUR REMOVAL FROM NATURAL GAS

Leo Ernest Hakka, Montreal, Quebec, Canada, assignor to Union Carbide Canada Limited, Toronto, Ontario, Canada

No Drawing. Filed July 12, 1971, Ser. No. 162,015
Int. Cl. B01d 53/34
U.S. Cl. 423—229 **4 Claims**

A process for dissolving elemental sulphur entrained in a hydrocarbon gas is described which consists of contacting the gas with an aqeous solution containing from 5 to 50 percent by weight of monoethanolamine and then separating the sulphur-laden solution from the gas.

3,826,812

TREATMENT OF FLUE GASES AND THE LIKE

Henry A. Cook, Fremont, and Jerrold E. Radway, Westlake, Ohio, assignors to Basic Incorporated, Cleveland, Ohio

Filed Oct. 22, 1971, Ser. No. 191,888
Int. Cl. C01b 17/00
U.S. Cl. 423—242 **10 Claims**

A process is described for simultaneously scrubbing fly ash and sulfur oxides from flue gases. The flue gases are treated with an aqueous mixture of a metal oxide, hydroxide or carbonate which forms a suspension of an insoluble or partially soluble metal sulfite and fly ash thereby removing said sulfur oxides and fly ash from the flue gases. The insoluble sulfite is converted to the soluble bisulfite to facilitate separation of the solid fly ash and insoluble impurities, and the sulfur oxide and metal oxide are subsequently recovered from the bisulfite solution.

3,826,813

PROCESS FOR THE PREPARATION OF MULLITE BY A SOLID STATE REACTION

Richard A. Gardner, Wappingers Falls, N.Y., and David L. Wilcox, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed June 20, 1972, Ser. No. 264,676
Int. Cl. C01b 33/26
U.S. Cl. 423—328 4 Claims

A process for forming a high grade mullite

$$3Al_2O_3 \cdot 2SiO_2$$

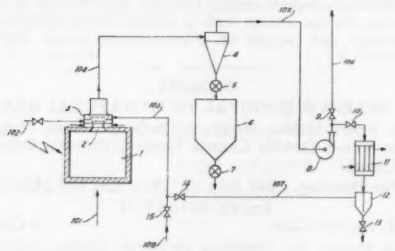
compound for use as an integrated circuit substrate including the steps of sintering an incompletely prereacted mullite and compensating for milling contamination by adjusting the stoichiometry of an initial mixture prior to a partial reacting step.

3,826,814

PROCESS OF MAKING A FINELY DIVIDED SILICIC ACID HAVING REDUCING PROPERTIES

Alfred Illigen, Lochau, Austria, and Walter Neugebauer, Constance, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

Continuation of abandoned application Ser. No. 51,183, June 30, 1970. This application Mar. 28, 1972, Ser. No. 238,971
Claims priority, application Germany, July 1, 1969, P 19 33 292.4
The portion of the term of the patent subsequent to July 4, 1989, has been disclaimed
Int. Cl. C01b 33/12, 33/18
U.S. Cl. 423—336 6 Claims



A finely divided silicic acid having reducing properties is made by reacting gaseous silicon monoxide at temperatures above 1500° C. with water vapor and subjecting the formed reaction product to sudden chilling immediately after its formation.

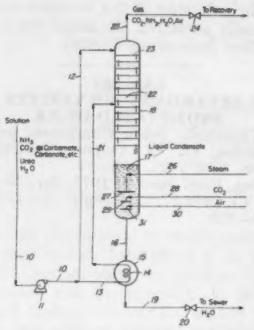
3,826,815

RECOVERY OF RESIDUAL AMMONIA FROM WEAK AQUEOUS SOLUTIONS THEREOF

Ivo Mavrovic, 530 E. 72nd St., New York, N.Y. 10016

Continuation-in-part of abandoned application Ser. No. 264,885, June 21, 1972. This application Oct. 15, 1973, Ser. No. 406,499
Int. Cl. C01c 1/02
U.S. Cl. 423—356 11 Claims

Ammonia is recovered from a waste, liquid effluent comprising a weak ammoniacal aqueous solution containing ammonia and/or ammonium carbamate or ammonium carbonate by stripping the solution with steam and an inert gas in a fractionator at specified conditions. Substantially all of the ammonia is recovered in an overhead gaseous product and a bottoms liquid product which is



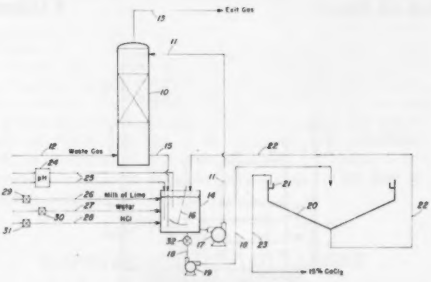
essentially condensate substantially free of ammonia is also recovered.

3,826,816

METHOD FOR SCRUBBING HCl FROM WASTE GASES

Walter R. McCormick, Salt Lake City, Utah, assignor to N L Industries, Inc., New York, N.Y.

Filed Sept. 13, 1972, Ser. No. 288,487
Int. Cl. C01b 7/08; C01f 11/24
U.S. Cl. 423—497 10 Claims



A system is provided whereby hot waste gases containing small amounts of hydrogen chloride plus additional combustion products including carbon dioxide, and water vapor are scrubbed substantially free of the hydrogen chloride by contacting the hot gases with a fluid scrubbing medium comprising an aqueous suspension of calcium hydroxide (milk of lime) and calcium chloride brine whereby the hydrogen chloride in the gases is converted to additional calcium chloride brine which is separated and recovered from the fluid scrubbing medium as a calcium chloride concentrate.

3,826,817

METAL HALIDES WITH LOW HYDROXYL ION CONTAMINATION

Ricardo C. Pastor, Manhattan Beach, and Antonio C. Pastor, Santa Monica, Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

No Drawing. Filed July 26, 1972, Ser. No. 275,130
Int. Cl. C01d 3/00
U.S. Cl. 423—499 11 Claims

The present invention is directed to the synthesis of metal halides which have extremely low hydroxyl ion contamination levels; e.g., 10^{-5}, 10^{-6}, or less. Such materials may be used to grow single crystals from which

laser windows of excellent mechanical, thermal, and optical properties may be produced.

3,826,818

METHOD FOR MAKING ANHYDROUS ALKALI METAL HYDROSULFITES

Joseph Beckwith Heitman, Tacoma, Wash., assignor to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Filed Aug. 3, 1972, Ser. No. 277,706
Int. Cl. C01b *17/66*
U.S. Cl. 423—515 4 Claims

In a method for making anhydrous alkali metal hydrosulfites by reacting sulfur dioxide and an alkali metal formate with alkali metal bisulfites, metabisulfites and hydroxides wherein an improved yield is effected by employing as the reaction medium alkyl substituted aliphatic amide solvents, such as dimethyl formamide or dimethyl acetamide.

3,826,819

SULFURIC ACID PURIFICATION PROCESS

Bruno Orlandini and Taesung Um, Kellogg, and Andrew H. Larson, Pinehurst, Idaho, assignors to The Bunker Hill Company, Kellogg, Idaho

No Drawing. Filed Apr. 21, 1972, Ser. No. 246,224
Int. Cl. C01b *17/90*
U.S. Cl. 423—531 3 Claims

A sulfuric acid purification process is described for removing or reducing the dissolved mercury concentration in concentrated sulfuric acid (87–96%) to a value less than three (3) parts per million and preferably less than one (1) part per million, Unpurified or raw concentrated sulfuric acid from an acid forming plant is first cooled to a temperature below 20° C. and preferably below 10° C. and is then treated with hydrogen sulfide gas in amounts equal to or greater than the stoichiometric equivalent to the dissolved mercury content. The acid is then aged for a period greater than 16 hours to allow the dissolved or dispersed hydrogen sulfide to fully react with the dissolved mercury to form a mercury sulfide precipitate. The precipitate is then removed from the acid by filtration. The dissolved SO_2 impurity is then stripped from the acid.

3,826,820

PREPARATION OF NON-SOLVATED CRYSTALLINE ALPHA-ALUMINUM HYDRIDE

Charles B. Roberts and Frank M. Brower, Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 18, 1965, Ser. No. 500,489
Int. Cl. C01b *6/00*
U.S. Cl. 423—645 3 Claims

This invention is to a process of preparing non-solvated crystalline alpha-aluminum hydride by refluxing aluminum hydride-trimethyl amine, precipitating and separating the formed tri(aluminum hydride)-trimethylamine adduct and heating said adduct at a maximum temperature of about 85° C. to produce said aluminum hydride. Aluminum hydride is useful as a fuel component in solid and hybrid rocket propellant systems.

3,826,821

REAGENTS FOR THE DIAGNOSIS OF INFECTIOUS MONONUCLEOSIS AND PREPARATION OF SAME

Joseph Zichis, Chicago, Ill., assignor to Beckman Instruments, Inc.

No Drawing. Continuation-in-part of abandoned application Ser. No. 583,433, Sept. 30, 1966. This application Feb. 2, 1971, Ser. No. 112,062
Int. Cl. G01n *31/00, 31/02, 33/16*
US. Cl. 424—12 4 Claims

Sheep or horse blood is specially treated to produce an antigen which is readily agglutinable by heterophil type antibodies present in the patient's serum. This antigen possesses properties of stability, sensitivity and agglutinability which are utilized in a serological diagnostic test for infectious mononucleosis. Two other antigens, prepared from beef blood and from guinea pig tissues, are used in the test to differentiate the infectious mononucleosis type antibody from the Forssman type.

3,826,822

LIQUID INSECTICIDAL COMPOSITIONS FOR IMPREGNATION OF SOLID SUPPORTS FOR PROLONGED DIFFUSION

Louis Moulin, Tassin la Demi-Lune, Maurice Confino, Saint-Cyr au Mont d'Or, and Gerard Godard, Saint-Clair du Rhone, France, assignors to PEPRO, Societe pour le Developpement et la Vente de Specialities Chimiques, Lyon, France

No Drawing. Filed Jan. 10, 1972, Ser. No. 216,791
Claims priority, application France, Jan. 8, 1971, 7101208
Int. Cl. A01n *9/28, 9/36*
U.S. Cl. 424—27 8 Claims

5 to 50% by weight of an acetal of formula

in which:

R is an alkyl radical containing 7 to 11 carbon atoms or a phenyl radical, possibly substituted by a lower alkyl.
A is a linear or branched alkyl chain containing from 2 to 5 carbon atoms, possibly substituted by one or more hydroxyl groups;

are added to 2,2 dichlorovinyldimethyl phosphate. (DDVP) to provide an insecticidal composition in which the DDVP is more uniformly released over an extended period.

3,826,823

STABILIZED PROSTAGLANDIN PREPARATIONS

Anne Cecile O'Rourke, Redwood City, and John Scott Kent, Palo Alto, Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

No Drawing. Filed Sept. 25, 1972, Ser. No. 291,616
Int. Cl. A61k *27/00*
U.S. Cl. 424—80 16 Claims

A dry, stabilized pharmaceutical preparation comprising a minor amount of a prostaglandin, particularly PGE_2, and a major amount of polyvinyl pyrrolidone which serves to stabilize, for extended periods of time, the chemical potency of the prostaglandin material.

3,826,824

INHIBITION OF GASTROINTESTINAL ULCERS WITH CALCITONIN

Wolfgang Doepfner, Basel, Switzerland, assignor to Sandoz Ltd., also known as Sandoz AG, Basel, Switzerland

No Drawing. Filed July 11, 1972, Ser. No. 270,811
Claims priority, application Switzerland, July 16, 1971, 10,484/71
Int. Cl. A61k *27/00*
U.S. Cl. 424—112 6 Claims

This invention concerns a method of preventing ulcers in the gastrointestinal system of mammals, comprising administration of a peptide hormone selected from the group consisting of porcine calcitonin, human calcitonin M and salmon calcitonin.

3,826,825

FUNGUS RESISTANT COMPOSITION

James Patrick Dowd and James C. Hunter, Houston, Tex., assignors to Napko Corporation, Houston, Tex.

No Drawing. Filed Mar. 13, 1972, Ser. No. 234,396
Int. Cl. A01n *11/00*
U.S. Cl. 424—145 1 Claim

An improved mildew inhibitor for paint capable of protecting either latex or solvent based paint from unsightly fungus growth. These compositions are prepared by mix-

ing finely divided zinc powder with pyrogenic aluminum oxide.

3,826,826

GERMICIDAL DIPS

Abraham Cantor, Elkins Park, Pa., and Murray W. Winicov, Flushing, N.Y., assignors to West Laboratories, Inc., Long Island City, N.Y.

No Drawing. Continuation of abandoned applications Ser. No. 771,283, Oct. 28, 1968, and Ser. No. 856,191, Sept. 8, 1969. This application Oct. 1, 1971, Ser. No. 185,801

Int. Cl. A61k *27/00*

U.S. Cl. 424—149 **11 Claims**

In germicidal dips, and particularly in the hypochlorite treatment of the teats of lactating animals for the prevention and control of mastitis, the improvement that comprises providing a solid lithium hypochlorite concentrate containing about 10 to 50% by weight of available chlorine, and having a maximum free hydroxide equivalent to about 3% LiOH and preferably below 0.5% by weight, dissolving said concentrate in water just prior to use in proportions to provide about 1 to 5% and preferably about 4 to 5% by weight of available chloride in the resulting solution, and utilizing such solution as a germicidal dip.

As a special embodiment, particularly for preparing germicidal dips for other purposes, where available chlorine levels of about .01 to 1% are desired, the composition is supplied with buffering and reducing components to be combined with the lithium hypochlorite when preparing use dilutions thereof. The reducing component provides slow inactivation of said hypochlorite, and the amount of reducing component is such as to substantially inactivate the hypochlorite within a practical time interval which is suitably about 2 to 6 times the germicidal contact time intended for such use dilution or dip.

3,826,827

FEED SUPPLEMENT FOR HOOFED ANIMALS

Joseph G. Forest, Waverly, and Edward J. Czarnetzky, Chazy, N.Y., assignors to International Stock Food Corporation, Waverly, N.Y.

No Drawing. Filed Apr. 22, 1971, Ser. No. 136,563

Int. Cl. A61k *27/00*

U.S. Cl. 424—164 **4 Claims**

The present invention relates to a feed supplement for horses and cattle, consisting essentially of an assimilable source of sulfur which may be sulfur itself, sodium, magnesium or potassium sulfate, methionine, cystine or cysteine. The treatment improves the hoofs of the animal.

3,826,828

CONTRACEPTIVE AND DEVICE FOR ITS APPLICATION

Paul Henri Morel, 28 Rue de l'University, Paris 7e, France

Filed July 7, 1971, Ser No. 160,283

Claims priority, application France, July 9, 1970, 7025522

Int. Cl. A61k *27/00*

U.S. Cl. 424—184 **3 Claims**

An intra-uretral contraceptive combination for use by males comprises a water-repellent liquid, e.g. a silicone liquid, and a paste, which may also be based on a silicone. In use the combination is injected into the ureter, e.g. from a suitable injector or device, so that the paste is downstream of the liquid.

3,826,829

SLUSH BEVERAGES CONTAINING FINE-GRAINED ICE CRYSTALS

***Anthony J. Marulich, Pequannock, N.J., assignor to* General Foods Corporation, White Plains, N.Y.**

No Drawing. Filed Nov. 17, 1970, Ser. No. 90,482

Int. Cl. A23l *1/04*

U.S. Cl. 426—190 **3 Claims**

Liquid beverage formulations which may be consumed as either a conventional soft drink or as a soft frozen slush beverage containing fine-grained ice crystals are produced. These liquid formulations, which may if desired be carbonated, are formed with water, sugars, polyols, flavor and color agents, and an effective amount of a stabilizing agent which includes pectin in combination with other gums.

3,826,830

CERTAIN PHOSPHORUS CONTAINING AMIDINE COMPOUNDS AS INSECTICIDES AND ACARICIDES

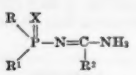
Ferenc M. Pallos, Pleasant Hill, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Application Jan. 11, 1971, Ser. No. 105,688, now Patent No. 3,758,685, which is a division of application Ser. No. 885,263, Dec. 15, 1969, now Patent No. 3,734,980. Divided and this application July 31, 1972, Ser. No. 276,863

Int. Cl. A01n *9/36*

U.S. Cl. 424—211 **1 Claim**

Compounds of the formula:



in which R is lower alkyl or lower alkoxy; R^1 is lower alkoxy or lower alkylthio; R^2 is hydrogen, lower alkyl, phenyl; mono or di-substituted phenyl; and X is oxygen when R^1 is lower alkylthio and sulfur when R^1 is lower alkoxy as insecticides and acaricides, and a process for preparing the compounds above having X be oxygen.

3,826,831

FUNGICIDAL COMPOSITIONS AND METHODS OF COMBATING FUNGI USING OPTIONALLY HALOGENATED CYANOPHENYL O,S-DIALKYL PHOSPHOROTHIOLATES

Shigeo Kishino, Yasuo Yamada, Yoshio Kuramashi, and Toyohiko Kume, Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Jan. 5, 1971, Ser. No. 104,177, now Patent No. 3,742,094, dated June 26, 1973. Divided and this application Feb. 6, 1973, Ser. No. 330,135

Claims priority, application Japan, Jan. 8, 1970, 45/2,286

Int. Cl. A01n *9/20, 9/36*

U.S. Cl. 424—210 **19 Claims**

Optionally halogenated cyanophenyl O,S-dialkyl phosphorothiolates, i.e. cyanophenyl or halocyanophenyl O,S-dialkyl phosphorothiolates wherein one of the alkyl groups may be cycloalkyl, alkyl of 4–6 carbon atoms, a chlorine-substituted lower alkyl group or a phenyl group and the

other alkyl group is methyl or ethyl, which thiolphosphates possess microbicidal, especially fungicidal properties.

3,826,832

N-SUBSTITUTED AMINO - N - NITRO-AMINO-ACETONITRILES AS ANTI-ANGINAL AGENTS

Paul L. Anderson, Dover, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Continuation-in-part of application Ser. No. 44,654, June 8, 1970, and a division of application Ser. No. 113,622, Feb. 8, 1971. This application June 1, 1972, Ser. No. 258,610

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 **6 Claims**

Certain known N-substituted amino-N-nitroso-aminoacetonitriles, e.g., N-(4-,β-hydroxyethyl-piperazino)-N-nitroso-α-methyl-aminoacetonitrile, have been found to be useful as anti-anginal agents.

3,826,833

CNS-DEPRESSANT COMPOSITIONS AND METHOD WITH [4-(10,11-DIHYDRODIBENZ[b,f]OXEPIN-10-YL) - 1 - PIPERAZINYL] - ALKYL - 3 - ALKYL - 2-IMIDAZOLIDINONES

Walter Schindler, Riehen, Basel-Stadt, Erich Schmid, Basel, and Armin Zuest, Birsfelden, Basel-Stadt, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Original application Aug. 5, 1970, Ser. No. 61,509, now Patent No. 3,725,411. Divided and this application Apr. 2, 1973, Ser. No. 347,038

Claims priority, application Switzerland, Aug. 11, 1969, 12,124/69

Int. Cl. A61k *27/00*

U.S. Cl. 424—250 **3 Claims**

Compounds of the class of 1-[2- or 3-[4-(10-11-dihydrodibenz[b,f]oxepin - 10 - yl) - 1 - piperazinyl]-alkyl]-3-alkyl-2-imidazolidinone, which can be substituted in 8-position by chloro, methyl or methoxy, and the pharmaceutically acceptable acid addition salts thereof, have a depressant effect on the central nervous system; pharmaceutical compositions comprising these compounds and a method of producing a depressant effect on the central nervous system of warm-blooded animals are provided.

An illustrative embodiment is 1-[3-[4-(8-chloro-10,11-dihydrodibenz[b,f]oxepin - 10 - yl) - 1 - piperazinyl]-propyl]-3-methyl-2-imidazolidinone.

3,826,834

USE OF VITAMIN B_6 FOR ENLARGING SUBNORMAL HAIR BULBS AND ENHANCING HAIR GROWTH THEREFROM

Aaron J. Reiches, 11 Brazillian Court, Ladue, Mo. 63124

No Drawing. Continuation-in-part of abandoned applications Ser. No. 144,992, May 19, 1971, and Ser. No. 178,460, Sept. 7, 1971. This application Aug. 29, 1972, Ser. No. 284,675

Int. Cl. A61k *27/00*

U.S. Cl. 424—263 **5 Claims**

Vitamin B_6, applied topically to the scalp, is found to enlarge subnormal hair bulbs, thereby increasing hair diameter, strength and body. On application to women's scalps topically with estrogens, estrogenically revived hair bulbs are so enlarged and their growth so enhanced as to produce hairs of normal characteristics.

3,826,835

8-BENZOFURYLMETHYL-1,3,8-TRIAZASPIRO(4,5) DECANES AS NEUROLEPTICS

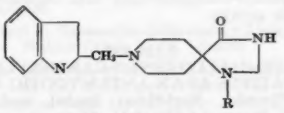
Charles Ferdinand Huebner, Chatham, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 105,126, Jan. 8, 1971. This application Sept. 24, 1971, Ser. No. 183,694

Int. Cl. A61k *27/00*

US. Cl. 424—267 **3 Claims**

8-[1-(2,3-dihydro - 2 - benzofuryl)alkyl] - 1,3,8 - triazaspiro-(4,5)-decanes e.g. those of the formula



R=H, aliphatic, araliphatic or aromatic radical,

or functional derivatives thereof are neuroleptic agents.

3,826,836

PHENYL-IMIDAZOLYL-FATTY ACID DERIVATIVES FOR TREATING MYCOTIC INFECTIONS

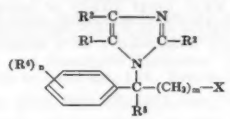
Karl Heinz Buchel, Werner Meiser, Manfred Plempel, and Carl Metzger, Wuppertal-Elberfeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application May 18, 1970, Ser. No. 38,531, now Patent No. 3,732,242, dated May 8, 1973. Divided and this application May 18, 1972, Ser. No. 254,429

Int. Cl. A61k *27/00*

U.S. Cl. 424—273 **40 Claims**

Phenyl-imidazolyl-fatty acid derivatives of the formula:



wherein

R^1, R^2, and R^3 are the same or different, and are hydrogen or lower alkyl;

R^4 is hydrogen, alkyl, lower alkoxy, alkylmercapto, or an electro negative moiety;

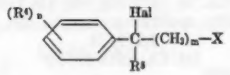
R^5 is benzene, benzene substituted by alkyl, lower alkoxy, alkylmercapto or an electro negative moiety, or R^5 is an aliphatic moiety;

X is a carboxyl moiety or a grouping of a functional carboxylic acid derivative;

m is 0, 1, 2, 3, 4, 5 or 6; and

n is 0, 1 or 2,

and pharmaceutically acceptable non-toxic salts thereof are produced by reacting a halogen derivative of the formula:



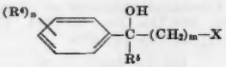
wherein

R^4, R^5, X, *m* and *n* are as above defined, and

Hal is halogen,

with an optionally alkyl substituted imidazole in the presence of acid-binding base or an excess of imidazole, preferably in an inert polar solvent at a temperature of from

about 20° C. to about 180° C., or reacting the above halogen derivative with an alkali metal or silver salt of an optionally alkyl substituted imidazole in an inert solvent at a temperature of from about 20° C. to about 200° C., or reacting a hydroxy compound of the formula:



wherein R^4, R^5, X, *m* and *n* are as above defined,

with an optionally alkyl-substituted imidazole.

These phenyl-imidazolyl-fatty acid derivatives exhibit antimycotic activity.

3,826,837

9-AZOLYL-(1)-FLUORENE-9-CARBOXYLIC ACID DERIVATIVES AS AN ANTI-MYCOTIC AGENT

Helmut Timmler, Karl-Heinz Buchel, and Manfred Plempel, Wuppertal-Elberfeld, Germany, assignors to Farbenfabriken Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Original application Feb. 1, 1971, Ser. No. 111,628, now abandoned. Divided and this application June 2, 1972, Ser. No. 259,276

Claims priority, application Germany, Feb. 3, 1970, P 20 04 697.3

Int. Cl. A61k *27/00*

U.S. Cl. 424—273 **24 Claims**

9-Azolyl-(1)-fluorene-9-carboxylic acid derivatives of the formula:

(I)

or a pharmaceutically acceptable non-toxic salt thereof, wherein R and R^1 are the same or different and are hydrogen, lower alkyl, lower alkoxy or halogen, A is an azolyl moiety having 2 or 3 nitro heteroatoms and X is hydroxyl, alkoxy, aminoalkoxy or a moiety of the formula:

wherein R^2 is hydrogen or alkyl and R^3 is hydrogen, alkyl or unsubstituted or substituted phenyl, are useful for their antimycotic activity in the treatment of mycoses in humans and animals. Processes for the production of said compounds are described.

3,826,838

BASIC THIENYLALKANES FOR INCREASING BLOOD FLOW

Klaus Posselt, Bergen-Enkheim, and Heribert Offermanns, Grossauheim, Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfurt am Main, Germany

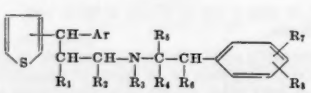
No Drawing. Original application Sept. 20, 1971, Ser. No. 182,192, now Patent No. 3,767,675. Divided and this application Mar. 30, 1973, Ser. No. 346,248

Claims priority, application Austria, Oct. 14, 1970, 9,277/70

Int. Cl. A61k *27/00*

U.S. Cl. 424—275 **15 Claims**

Compounds having the formula



I

where the thienyl group can be substituted by one or more lower alkyl groups, Ar is a thienyl or phenyl group which can be substituted by one or more lower alkyl or lower alkoxy groups, R_1, R_2, R_3, R_4 and R_5 are hydrogen or lower alkyl, R_6 is hydrogen or hydroxyl and R_7 and R_8 are the same or different and are hydrogen, hydroxyl, halogen, lower alkyl, lower haloalkyl or lower alkoxy and their salts are useful in heart and circulatory illnesses.

3,826,839

ANTI-ARTHRITIC COMPOSITIONS COMPRISING ESTER DERIVATIVES OF PULVINIC ACID AND METHODS OF PRODUCING ANTI-ARTHRITIC ACTIVITY

Blaine M. Sutton, Hatboro, Donald T. Walz, Drexel Hill, and James W. Wilson, Wayne, Pa., assignors to Smithkline Corporation, Philadelphia, Pa.

No Drawing. Continuation-in-part of abandoned application Ser. No. 94,974, Dec. 3, 1970. This application Oct. 20, 1971, Ser. No. 191,051

Int. Cl. A61k *27/00*

U.S. Cl. 424—279 **15 Claims**

Pharmaceutical compositions having anti-arthritic activity comprising an ester derivative of pulvinic acid and methods of producing anti-arthritic activity by administering internally said compositions. Certain of the pulvinic acid derivatives are novel compounds per se.

3,826,840

3-(4-METHYL-3-CYCLOHEXENYL)BUTYL ESTERS AND EPOXIDIZED DERIVATIVES THEREOF AS INSECT JUVENILE HORMONE MIMICKING COMPOUNDS AND INSECTICIDES

Jerry G. Strong, Westfield, N.J., assignor to Mobil Oil Corporation

No Drawing. Filed June 14, 1971, Ser. No. 153,058

Int. Cl. A01n *9/24*

U.S. Cl. 424—305 **6 Claims**

3-(4-Methyl-3-cyclohexenyl)butyl esters and epoxidized derivatives thereof are a class of compounds useful for insect control. In particular, such compounds are useful for contacting various metamorphological stages of insects, especially the larval and adult stages, resulting in insect mortality or in severe adult insect abnormalities,, such as undeveloped wings and abdomens, and inhibited reproduction.

3,826,841

METHOD FOR EXTERMINATING RODENTS AND RODENTICIDE COMPOSITIONS

Hiroshi Yamamoto, Tokyo, Kengo Koike, Ageo, and Koji Ohgushi and Iwao Tokumitsu, Fukuoka, Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

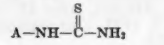
No Drawing. Filed Sept. 5, 1972, Ser. No. 286,092

Claims priority, application Japan, Sept. 13, 1971, 46/70,388

Int. Cl. A01n *9/12, 9/20*

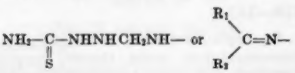
U.S. Cl. 424—323 **4 Claims**

A rodenticide including as an effective component a compound of the formula (1):



(1)

wherein A represents



R_1 is hydrogen or alkyl of 1 to 9 carbons and R_2 is hydrogen, cyano or lower alkyl has been found to have excellent exterminating effects on rodents.

3,826,842

INSECT REPELLENT COMPOSITIONS AND PROCESS HAVING AN N-SUBSTITUTED HYDROXYALKYL AMINE AS AN ACTIVE INGREDIENT

Carl Bordenca, Pointe Vedra Beach, and Robert P. Johnson and Kenneth P. Dorschner, Jacksonville, Fla., assignors to SCM Corporation, Cleveland, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 189,464, Oct. 14, 1971. This application June 23, 1972, Ser. No. 265,724

Int. Cl. A01n *9/20*

U.S. Cl. 424—325 5 Claims

Monoalkanolamines having a C_{3-6} alkanol residue with terminal hydroxylation and having at least one of the amino hydrogens replaced by a C_{8-10} n-alkyl radical are effective insect repellents and even can repel biting flies from the skin of animals.

3,826,843

1-SUBSTITUTED BIGUANIDES AS GASTROINTESTINAL SPASMOLYTIC AGENTS

Julius Diamond, 120 Red Rambler Drive, Lafayette Hill, Pa. 19444; George H. Douglas, 21 Manor Road, Paoli, Pa. 19301; and Bernard J. Burns, 2171 Disston St., Philadelphia, Pa. 19149

No Drawing. Continuation-in-part of abandoned application Ser. No. 89,005, Nov. 12, 1970. This application Oct. 14, 1971, Ser. No. 189,388

Int. Cl. A61k *27/00*

U.S. Cl. 424—326 21 Claims

The 1-substituted phenyl biguanide compounds of this invention possess useful gastric anti-secretory and spasmolytic properties. Compounds of this type which also display anti-hypertensive and CNS depressant properties are also disclosed.

3,826,844

CERTAIN DITHIOKETALS OF GLYOXYLOYL HALIDE-1-PHENYLHYDRAZONE AS ANTI-ARTHROPODAL AGENTS

Malcolm W. Moon, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Nov. 27, 1970, Ser. No. 93,497

Int. Cl. A01n *9/12*

U.S. Cl. 424—327 11 Claims

Some new cyclic and noncyclic dithioketals of glyoxyloyl halide 1-phenylhydrazones have been found to be effective anti-arthropodal agents. The cyclic dithioketals include 5-membered and 6-membered rings with or without alkyl substituents. The noncyclic dithioketals are limited to alkyl on the sulfur atoms. The phenyl group can have alkyl, alkoxy, haloalkyl, alkylmercapto, and halogen substituents. The "halide" can be chloride or bromide. Formulations for use against arthropod pests are described as well as methods for controlling such pests wherever they occur and become a problem.

3,826,845

OINTMENT BASE

Tsunesuke Suyama, Masnori Saeki, and Ryuzo Okada, Tokyo, Japan, assignors to Sankyo Company Limited

No Drawing Filed Feb. 4, 1970, Ser. No. 8,711

Claims priority, application Japan, Feb. 8, 1969, 44/9,426; Dec. 27, 1969, 45/159

Int. Cl. A61k *9/06*

U.S. Cl. 424—365 5 Claims

This invention relates to a novel ointment base whose consistency is proper for an ointment base and is scarcely varied depending upon a temperature. It is useful for a preparation of ointments, cosmetics and the like, and comprises triglyceride being liquid at ordinary temperatures or a mixture of a dibasic aliphatic carboxylic acid ester and a salicyclic acid ester; silicic acid anhydride; and a nonionic surfactant or an ionic surfactant selected from the group of a fatty acid polyoxyethylene-phosphate, a fatty alcohol-polyoxyethylene-phosphate, lecithin, and alkylsulfate, a fatty acid-polypeptide condensate or an ampholytic surfactant of carboxylic acid type.

3,826,846

ANTIFUNGAL COMPOSITION AND METHOD OF ALKYLENEBISDITHIOCARBAMATE COMPLEX COMPOUNDS

Robert L. Noveroske, 1401 Snyder Lane, Walnut Creek, Calif. 94598

No Drawing. Continuation-in-part of application Ser. No. 755,435, Aug. 26, 1968, now Patent No. 3,536,742. This application Sept. 16, 1970, Ser. No. 72,791

Int. Cl. A01n *9/00, 9/12*

U.S. Cl. 424—289 13 Claims

Novel complexes of alkanolamines with zinc-containing ethylenebisdithiocarbamates or 1,2 - propylenebisdithiocarbamates such as complex compounds of from 1 to 4 moles zinc ethylenebisdithiocarbamate with one mole 2-(2 - aminoethylamino)ethanol(aminoethylethanolamine) are prepared by mixing together a water-soluble ethylenebisdithiocarbamate, water-soluble salts of zinc and one or more additional metal such as manganese or iron and one or more alkanolamines. The complex compounds are stable and can be used to regulate the growth of plants. They are useful as antifungal agents for the control of such fungi as apple scab fungus, rice blast, grape downy mildew and late blight organisms. They also are useful for promoting the growth of higher plants such as grapes, potatoes and the like.

3,826,847

PROCESS FOR PREPARATION OF FLAVOR DURABLE CHEWING GUM

Koichi Ogawa and Masatoshi Terasawa, Tokyo, Japan, assignors to Lotte Co., Ltd., Tokyo, Japan

No Drawing. Filed June 25, 1971, Ser. No. 157,002

Claims priority, application Japan, Oct. 21, 1970, 45/92,147

Int. Cl. A23g *3/30*

U.S. Cl. 426—3 6 Claims

A chewing gum product having a durable flavor and containing seasonings including spices which have been coated, encapsulated or combined with high molecular weight compounds such as polyvinyl esters.

3,826,848

PREPARATION OF FUNCTIONAL FISH PROTEIN CONCENTRATES AND ISOLATES

John Spinelli and Barbara Jean Koury, Seattle, Wash., assignors to the United States of America as represented by the Secretary of Commerce

No Drawing. Filed Sept. 14, 1972, Ser. No. 289,040

Int. Cl. A23j *1/04*

U.S. Cl. 426—7 10 Claims

A slurry of comminuted fish is partially hydrolyzed with a proteolytic enzyme and the modified proteins are recovered as a protein-phosphate complex. The complex is extracted with a polar solvent to remove lipids and then with water to remove the solvent. The extracted complex is neutralized with an alkali and dried. A carbohydrate may be added to the product prior to the dry-

ing to improve its storage properties. An enzymically modified myofibrillar protein isolate may be prepared by preliminarily extracting the comminuted fish with a saline solution and then with water.

3,826,849

PREPARATION OF WINE

Peter Jacobus Venter and Johannes Daniel Malan, Stellenbosch, Cape Province, Republic of South Africa, assignors to Tobacco Research and Development Institute Limited, Zug, Switzerland

Continuation-in-part of abandoned application Ser No. 251,200, May 8, 1972. This application May 15, 1973, Ser. No. 360,609

Int. Cl. C12g *1/02*

U.S. Cl. 426—15 **3 Claims**

In a wine making process the skins and pips are separated from the pulp after crushing of the grapes. The pips are removed and the skins are then finely ground in a colloid mill. The ground product is then added to a fermentation must for wine making. The must could be the original pulp or another must.

3,826,850

PREPARATION OF BAKED GOODS HAVING SOURDOUGH FLAVOR WITHOUT A SOURDOUGH STARTER

David R. Shenkenberg, Alexandria, and Faye G. Barnes, Arlington, Va., and Byron H. Webb, Harpers Ferry, W. Va., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Oct. 18, 1971, Ser. No. 190,321

Int. Cl. A21d *2/14, 2/34*

U.S. Cl. 426—25 **1 Claim**

Sourdough flavored bread and other baked products are made without the use of the traditional sourdough starter sponge. The distinctive taste of sourdough baked products is obtained by substituting acid whey and vinegar or acetic acid for the starter sponge. Special yeast that will grow only at pH levels below 4.0 are not needed; good leavening is obtained at higher pH values with regular baker's yeast. Of significance to the baking industry is that the process provides for uniformity of product and can be done with standard baking equipment using standard baking procedures.

3,826,851

PROCESS FOR ENHANCING FRESH TOMATO FLAVOR IN TOMATO PRODUCTS

Dante G. Guadagni, Moraga, and Ron G. Buttery, Richmond, Calif. (both % Western Regional Research Laboratory, Berkeley, Calif. 94710)

No Drawing. Filed Aug. 11, 1972, Ser. No. 279,920

Int. Cl. A23l *1/23*

U.S. Cl. 426—65 **1 Claim**

The flavor of processed tomato and other food products is significantly improved by the addition of a mixture composed of cis-hex-3-enal, 2-methylhept-2-en-6-one, eugenol, and β-ionone.

3,826,852

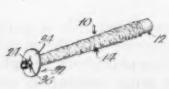
CASING-CARRIER ASSEMBLY AND METHOD

Robert M. Levaco, San Francisco, and Jordan A. Dolgoff, South San Francisco, Calif.; said Levaco assignor to Oppenheimer Casing Co.

Filed Oct. 28, 1971, Ser. No. 193,530

Int. Cl. A22c *13/00*

U.S. Cl. 426—132 **9 Claims**



A natural casing is shirred onto a self-supporting tubular carrier member. The carrier member is formed of an extruded plastic material, such as polyethylene, which has an inherent elastic memory, and which is severed along a portion of its length prior to the placement of the casing thereon. The line of severance terminates short of one end of the tubular member to provide a closed circumferentially continuous end portion. The elastic memory of the material causes the wall portion adjacent one side of the line of severance to curl beneath the wall portion at the other side of the line of severance, so that the carrier member assumes a generally frusto-conical configuration. The inner diameter of the casing is larger than the small diameter portion of the carrier member so that the casing can be readily shirred thereon, although the inner diameter of the casing is smaller than the larger diameter portion of the carrier member to prevent axial displacement therefrom. A holding member is provided at the small diameter end of the carrier member to positively retain the casing in place.

3,826,853

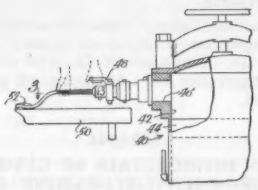
CASING-CARRIER ASSEMBLY AND METHOD

Robert M. Levaco, San Francisco, Calif., assignor to Oppenheimer Casing Co.

Original application Oct. 28, 1971, Ser. No. 193,530. Divided and this application Feb. 16, 1972, Ser. No. 226,687

Int. Cl. A22c *13/00*

U.S. Cl. 426—132 **5 Claims**



A natural casing is shirred onto a self-supporting tubular carrier member. The carrier member is formed of an extruded plastic material, such as polyethylene, which has an inherent elastic memory, and which is severed along its length prior to the placement of the casing thereon. The elastic memory of the material causes the wall portion adjacent one side of the line of severance to curl beneath the wall portion at the other side of the line of severance, so that the carrier member assumes a generally frusto-conical configuration. The inner diameter of the casing is larger than the small diameter portion of the carrier member so that the casing can be readily shirred thereon, although the inner diameter of the casing is smaller than the larger diameter portion of the carrier member to prevent axial displacement therefrom. A holding member is provided at the small diameter end of the carrier member to positively retain the casing in place.

3,826,854

INSTANT MARSHMALLOW POWDER AND METHOD FOR ITS PRODUCTION

Charles A. Sanna, Madison, and Filip Leon Sanna, Mount Horeb, Wis., assignors to Beatrice Foods Co.

Filed Jan. 26, 1972, Ser. No. 220,883

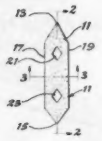
Int. Cl. A23g *3/00*

U.S. Cl. 426—163 **8 Claims**

A particulate marshmallow powder having a moisture content of less than 6%, and which can be reconstituted in water to form a marshmallow paste. The powder's low moisture content and long shelf life make it suitable for

incorporation in instant cocoa mix and other dried food products. A spray-drying process for production of the powder is also described.

3,826,855
CITRUS FRUIT PEELS FOR ALCOHOLIC BEVERAGES
John J. Fiorella, 181 Richmond Ave., Buffalo, N.Y. 14222
Filed Mar. 27, 1972, Ser. No. 238,277
Int. Cl. A23l *1/12*
U.S. Cl. 426—175 **5 Claims**



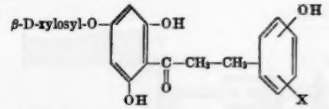
Citrus fruit peels, such as lemon or lime peels, for use in flavoring alcoholic beverages, such as cocktails, are in strip form, with the face of the citrus peel being coated with a protective material to insure its freshness and with the peel being cut or slit on the sides, ends or in a middle portion to improve its flavoring ability when it is twisted and added to an alcoholic beverage. Also disclosed are methods of making such peels and of using them. Packages of the peels are also described wherein inert gases and a suitable low temperature are employed to preserve the citrus flavor which is released upon twisting the peels.

ERRATUM

For Class 426—190 see:
Patent No. 3,826,829

3,826,856
DIHYDROCHALCONE XYLOSIDES AND THEIR USE AS SWEETENING AGENTS
Robert M. Horowitz, Pasadena, and Bruno Gentili, Glendale, Calif., assignors to the United States of America as represented by the Secretary of Agriculture
No Drawing. Filed May 23, 1972, Ser. No. 256,084
Int. Cl. A23l *1/26*
U.S. Cl. 426—213 **6 Claims**

Compounds of the structure—



wherein X is hydrogen, hydroxy, or lower alkoxy. These compounds are intensely sweet, and are useful for sweetening foods and other edible substances.

3,826,857
HARD CANDY
Harold E. Horn, Oak Lawn, and Martin M. Godzicki, Chicago, Ill., assignors to CPC International Inc.
No Drawing. Continuation-in-part of abandoned application Ser. No. 748,155, July 29, 1968. This application Apr. 30, 1971, Ser. No. 139,194
Int. Cl. A23g *3/00*
U.S. Cl. 426—214 **8 Claims**

Hard candy containing a significant proportion of a low D.E. starch hydrolysate. The hard candy has improved hygroscopicity characteristics, contains more water than conventional hard candy, and yet is hard and clear.

ELECTRICAL

3,826,858
CURRENT SUPPLY DEVICE FOR CERAMIC ELECTRODES

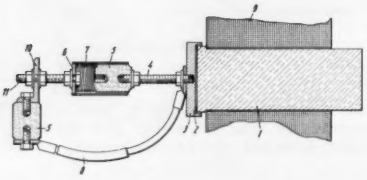
Helmut Pieper, Ketteler Str. 11, 877 Lohr, and Gunther Umlauf, Ringstr. 8, Steinbach am Wald, both of Germany

Filed July 24, 1973, Ser. No. 382,150

Claims priority, application Germany, July 25, 1972, 2235703

Int. Cl. C03b *5/00*

U.S. Cl. 13—6 **6 Claims**



An electrode assembly used with furnaces for the melting of conductive masses such as glass comprises a ceramic electrode which has an exterior end face abutted by a highly ductile mass which is placed under pressure thereagainst and heated to a temperature closely below its melting point. Because the mass is highly ductile at this temperature and is pressed thereagainst by a ram, the mass closely and intimately conforms to the end face of the ceramic electrode and facilitates the application of current to the electrode. Preferably the ram is spring-biased against the mass and is mounted for angular movement to maintain a centered relationship relative to the electrode.

3,826,859
ELECTRONIC MUSICAL INSTRUMENT WITH FREQUENCY-DEVIATED PEDAL TONE SIGNAL

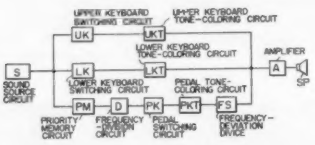
Akihisa Suzuki, Kamimura, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Shizuoka-ken, Japan

Continuation-in-part of Ser. No. 113,249, Feb. 8, 1971, abandoned. This application Oct. 17, 1972, Ser. No. 298,357

Claims priority, application Japan, Feb. 10, 1970, 45-12784; Feb. 26, 1970, 45-19153

Int. Cl. G10h *1/04*

U.S. Cl. 84—1.17 **4 Claims**



In an electronic musical instrument, a tone signal for the pedal keyboard is obtained by frequency-dividing the manual tone signal. The pedal tone signal thus obtained is passed through a frequency shifter to become a slightly frequency-deviated signal whose frequency is not an exact integral submultiple of the frequency of the manual tone signal. In this instrument, concurrent sounding of the pedal tone and the manual tone brings out a beat as in an instrument having tone generators of an individual oscillating system.

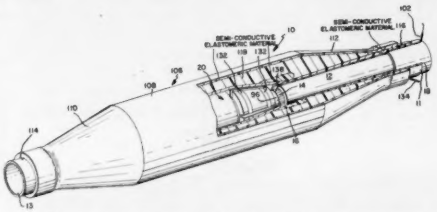
3,826,860
HIGH VOLTAGE ELECTRICAL CONNECTOR

Frederick Carl De Sio, Hershey, and Walter Myers Werner, Downingtown, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 8, 1973, Ser. No. 339,465

Int. Cl. H02g *15/08*

U.S. Cl. 174—73 S **6 Claims**



This invention relates to an insulated high voltage electrical connector for splicing together cable carrying high currents at high voltages. More particularly, the invention includes a current-carrying connector housing which contains a power-driven piston assembly for driving wedge-shaped jaws onto the center conductor of the cable. An internal shield positioned at either end of the housing modulates voltage potential lines to prevent dangerous stress buildup. Between the housing and a molded external shield, a continuous body of insulation is provided. Vent tubes provide escape means for otherwise trapped air and gases which could contaminate the semi-conductive and non-conductive members. The integrity of the molded external shield is maintained by placing ignition wires through the ends of the connector to the power-driven piston assembly.

3,826,861
TERMINAL CONNECTORS FOR INSULATED CONDUCTORS

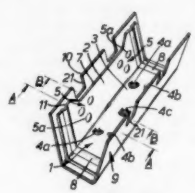
Walter Karl, Running Stream; Peter John Rooney, Concord, and Alexander Ulk, Kingsgrove, all of Australia, assignors to Utilux Pty., Limited

Continuation of Ser. No. 7,064, Jan. 30, 1970, abandoned. This application July 3, 1972, Ser. No. 268,807

Claims priority, application Australia, Feb. 5, 1969, 50006/69

Int. Cl. H02g *15/08*

U.S. Cl. 174—84 C **3 Claims**



An electrical terminal connector for crimping onto an insulated electrical conductor, comprising a trough-shaped ferrule, an insulation piercing element, such as a group of spikes, projecting from the side walls of the ferrule, and conductor engaging means, such as dimples, projecting into the space and located in co-operating juxtaposition with respect to the element, the side walls during crimping being rolled inwardly

so that the conductor engaging means engages the conductor and the element pierces the insulation to make electrical contact with the conductive core of the conductor.

3,826,862
LAMINATE TAPE AND LAMINATE SHEATHED CABLE HAVING AN ETHYLENE/GLYCIDYL COPOLYMER ADHESIVE

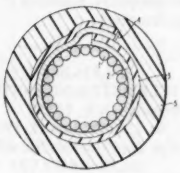
Terumichi Ichiba; Hiroshi Shimba, and Hiroaki Mukunashi, all of Yokohama, Japan, assignors to Sumitomo Electric Industries Ltd., Osaka, Japan

Filed May 14, 1973, Ser. No. 360,248

Claims priority, application Japan, May 13, 1972, 47-47333; May 13, 1972, 47-47335; May 27, 1972, 47-52601; May 27, 1972, 47-52602

Int. Cl. H01b 7/18

U.S. Cl. 174—102 R **10 Claims**



A binary copolymer having a melt index of 16g/10 min or less measured at a temperature of 190°C under a load of 2,160 g consisting of (a) ethylene; and (b) a comonomer selected from glycidyl methacrylate, glycidyl acrylate and allyl-glycidyl ether; or a mixed composition comprising (a′) as a first component, one or more of the above mentioned binary copolymers; and (b′) as a second component, one or more other copolymers consisting of (a″) ethylene; and (b″) a comonomer selected from an alkyl acrylate, an alkyl methacrylate and vinyl acetate, is coated on one or both surfaces of a metal tape to make a laminate tape. The laminate tape is used for preparing a laminate sheathed cable. The laminating resin may contain an antioxidant.

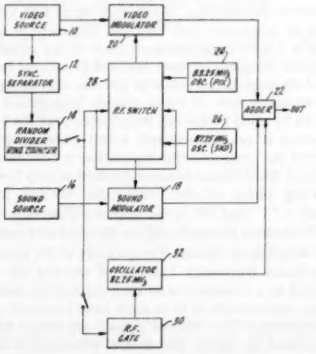
3,826,863
SUBSCRIPTION TELEVISION SYSTEM USING AUDIO AND VIDEO CARRIER REVERSAL

Arthur R. Johnson, Des Plaines, Ill., assignor to Oak Industries Inc., Crystal Lake, Ill.

Filed Feb. 9, 1973, Ser. No. 331,092

Int. Cl. H04n 1/44

U.S. Cl. 178—5.1 **5 Claims**



A subscription television system reverses the audio and video carriers within a particular channel on a random basis. A switching signal, nominally one Mhz beneath the video carrier, is transmitted to each of the receivers for use in effecting decoding at each receiver location.

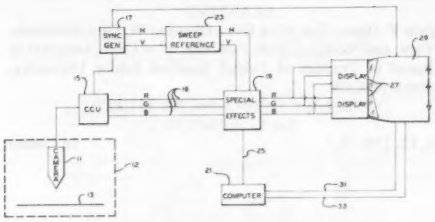
3,826,864
SPECIAL EFFECT GENERATOR FOR A SIMULATOR VISUAL SYSTEM

Eldred H. Paufve, Susquehanna, Pa., assignor to The Singer Company, Binghamton, N.Y.

Filed Apr. 13, 1973, Ser. No. 351,086

Int. Cl. G09b 9/08; H04n 7/18

U.S. Cl. 178—6.8 **11 Claims**



A system for generating sky, horizon scenes and scenes simulating low visibility in a flight simulator visual system using a television display is shown. Aircraft attitude information is used in a horizon generator to locate the horizon on a line-to-line basis. The information from the horizon generator is modified by functions of visibility range, altitude, time of day and location above or below clouds to develop the proper scenes, such as white for sky below clouds, white for clouds, the blue for sky above clouds and to switch between these synthetically generated scenes and a terrain scene provided by a camera model system or other image generator.

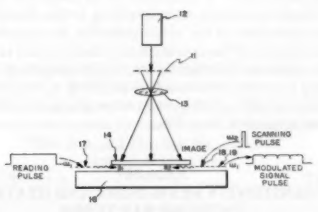
3,826,865
METHOD AND SYSTEM FOR ACOUSTO-ELECTRIC SCANNING

Calvin F. Quate, Los Altos Hills, and Oberdan W. Otto, Mountain View, both of Calif., assignors to Board of Trustees of Leland Stanford Junior University, Stanford, Calif.

Filed Apr. 16, 1973, Ser. No. 351,272

Int. Cl. H04n 5/30

U.S. Cl. 178—7.1 **20 Claims**



A method and system for scanning conductivity perturbations in semiconductor films by using the piezoelectric fields of acoustic surface waves. In accordance with one embodiment, a piezoelectric substrate is situated adjacent to and spaced a small distance from a semiconductor film. A reading acoustic surface wave of relatively long pulse duration is propagated along the piezoelectric substrate in one direction and a relatively short scanning acoustic wave pulse is propagated in the opposite direction. The amplitude of the reading wave is modulated by the scanning pulse at the point

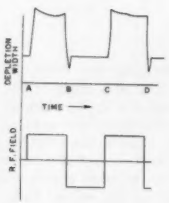
where the two pass each other. In accordance with one embodiment, an optical pattern image on the semiconductor film produces conductivity perturbations through carrier-pair generation. These conductivity perturbations appear as amplitude variations in the reading acoustic wave pulse after its interaction with the scanning acoustic wave pulse, so that the electrical output from the piezoelectric substrate contains the optical information in the pattern image on the semiconductor film. Two dimensional scanning may be accomplished by successively mechanically displacing the optical pattern being scanned with respect to the semiconductor film.

3,826,866

METHOD AND SYSTEM FOR ACOUSTO-ELECTRIC SCANNING

Calvin F. Quate, Los Altos Hills; Oberdan W. Otto, Mountain View, and Nicolas J. Moll, Palo Alto, all of Calif., assignors to Board of Trustees of Leland Stanford Junior University, Stanford, Calif.

Filed Apr. 16, 1973, Ser. No. 351,237
Int. Cl. H04n *5/30*
U.S. Cl. 178—7.1 **16 Claims**



A method and system for scanning an energetic image to convert the information in the energetic image into an electrical signal. A semiconductor has an electrical field applied thereto to increase the average depletion layer width of the semiconductor by charging the semiconductor surface states. The energetic image is impinged upon the semiconductor and begins discharging the surface states in accordance with intensity variations in the image to produce depletion layer with variations. A piezoelectric substrate is situated adjacent to the semiconductor. A reading acoustic surface wave is propagated along the piezoelectric substrate along one dimension of the semiconductor. The amplitude of the reading wave is modulated by the depletion layer width perturbations of the semiconductor so that an output acoustic wave is formed. The output acoustic wave is converted to an electrical signal having amplitude variations corresponding to the depletion layer width perturbations of the semiconductor. In accordance with one embodiment of the invention two dimensional scanning of the semiconductor is achieved through propagating a plurality of reading acoustic surface waves differing in frequency from each other and spaced from each other along a second dimension of the semiconductor film.

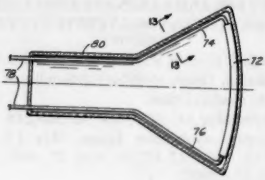
3,826,867

HIGH-SENSITIVITY BEAM-INDEX AND HEATERLESS CATHODE RAY TUBES

David M. Goodman, 3843 Debra Ct., Seaford, N.Y. 11783

Continuation-in-part of Ser. No. 212,612, July 26, 1962. This application Feb. 17, 1964, Ser. No. 345,197
Int. Cl. H04n *9/24*
U.S. Cl. 178—5.4 F **43 Claims**

Improvements are set forth for generating and detecting index signals which indicate the position of a scanning beam on a target screen. Light pipe-scintillator combinations are disposed about the target screen, the funnel section and the electron gun section of beam-index and multicolor cathode ray tubes. Multiple configurations of optical fibers, hollow cylinders and funnels collect, transform, and concentrate electromagnetic radiation, index signals, and derivates thereof. Light pipe-scintillator configurations used with the target



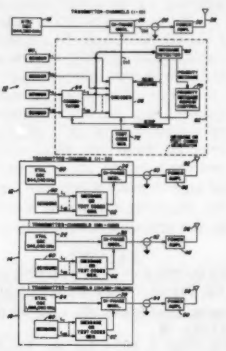
screen transmit optical signals from different regions of the target screen to its periphery. Scanning of the target screen by light beams is also described.

3,826,868

TELEMETERING SYSTEM

John A. Nugent, Brighton, N.Y. 11235

Division of Ser. No. 216,975, Jan. 11, 1972. This application Sept. 26, 1973, Ser. No. 400,947
Int. Cl. H04l *27/24*
U.S. Cl. 178—67 **14 Claims**



A multi-channel telemetering system is described which is capable of transmitting many channels of information over very narrow bandwidths; the herein described system being adapted to telemeter over 100,000 channels of information utilizing a 2 KHz band between each of the adjacent broadcase station frequencies over the AM broadcast band. A plurality of channels is included to provide digital signals which phase modulate one of many carrier frequencies which are separated by small frequency increments over the band. When information is not transmitted, a test code generator phase modulates the carrier so that the carrier is continuously phase modulated. Modulation is accomplished at very low data rates by shifting phase of the carrier 90° in one direction to represent a "1" and 90° in the opposite direction to represent a "0." Numerous channels can be received and monitored at a remote monitoring station. The receiver at the monitoring station includes frequency translation circuits for translating each band to a common band then separating each carrier of the many carriers which lie in each band by means of a narrow band pass filter. The filtered signals are phase demodulated and decoded to derive the several channels of information transmitted by each carrier signal. The demodulated carriers are monitored for the continuous phase modulation in accordance with the test code signal such that any failure in the system is readily detected. The system also provides for priori-

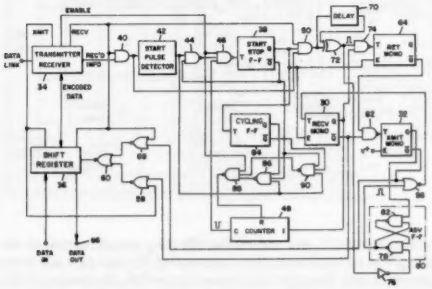
ty channels which operate the encoder to transmit priority information when present ahead of information which may be present in other channels. The encoder and phase modulator are also adapted to operate such that complete messages and test code signals are transmitted at rates compatible with the narrow band operation of the system.

3,826,869

CLOCK SYNCHRONIZATION CIRCUIT

Naftali Vax, and Wook Rang Shim, both of San Francisco, Calif., assignors to Lynch Communication Systems, Inc., San Francisco, Calif.

Filed Sept. 18, 1972, Ser. No. 290,226
Int. Cl. H04l *7/00*
U.S. Cl. 178—69.5 R **9 Claims**



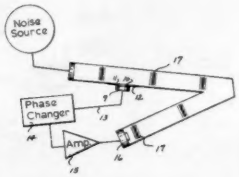
The receiver clock of an asynchronous half-duplex data link in a call concentrator is initiated and synchronized by a synchronization circuit which responds to level transitions in a received pulse train and overrides the internal operation of the receiver clock to pull it into synchronism with the transmitter clock each time a level transitions in the receiver clock is out of phase with the corresponding level transitions of the transmitter clock as embodied in the pulse train. The two clocks of the data link are identical and can function either as master or as slave, depending on the direction of transmission.

3,826,870

NOISE CANCELLATION

Robert J. Wurm, Greendale, and Arnold A. Bergson, Milwaukee, both of Wis., assignors to Quest Electronics Corporation, Milwaukee, Wis.

Filed Mar. 20, 1970, Ser. No. 21,554
Int. Cl. H04r *1/28*
U.S. Cl. 179—1 P **5 Claims**



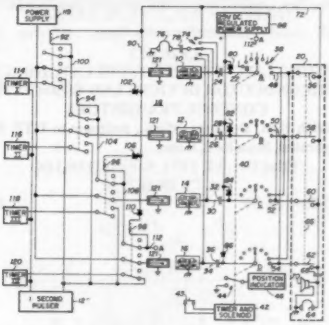
A pipe for an engine exhaust is joined with a cancellation tube in a V-joint and beyond this joint a single pipe portion extends to an exhaust opening. The cancellation tube provides a shunt path for sound waves produced by a sound transducer disposed at the outside end of the cancellation tube. The sound transducer is driven by an amplifier and phase inverting network which in turn responds to a sensor transducer in the first pipe. This transducer establishes a signal in accordance with the noise in the first pipe and the sound transducer thus produces sound waves corresponding to and about 180° out of phase with the engine noise. At the V-joint, the noise of the engine exhaust is largely cancelled by the waves in the cancellation tube.

3,826,871

APPARATUS FOR PREFERENCE TESTING

Delmar R. Kraemer, 827 Greenwood, Denton, Tex. 76201

Filed Feb. 5, 1973, Ser. No. 329,423
Int. Cl. G09b *5/02*
U.S. Cl. 179—1 B **15 Claims**



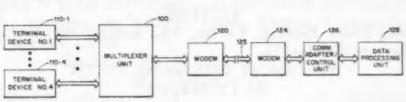
Apparatus for investigating and recording a testee's interest in one of a plurality of audio and/or visual presentations wherein each presentation is generated by a separate source connected to one of a plurality of communication lines that also connects to one output of a multiple output power source. each output of the power source is at a different voltage level such that each communication line has a distinct voltage applied thereto from the power source. A scrambling switch randomly interconnects the communication lines with a like number of output lines such that the presentations appear on each of the output lines in a random pattern. A testee selects a particular preference by actuating a push-button that couples his selection to an audio and/or visual display. A plurality of time recorders, one for each output line and individually responsive to one voltage level from the power source, records the amount of time a particular presentation is coupled to the display.

3,826,872

TRANSPARENT MULTIPLEXER COMMUNICATION TRANSMISSION SYSTEM

William W. MacGregor, Wellesley Hills, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 2, 1973, Ser. No. 320,040
Int. Cl. H04j *3/04*
U.S. Cl. 179—15 A **27 Claims**



A communication multiplexing apparatus including scanning circuits and control circuits operatively couples an input/output data processing device to a plurality of input/output data units through a plurality of common interface lines for transmission and reception of data. The multiplexing ap-

paratus is completely transparent to data processing device and input/output units as it recognizes no special characters within the data being transmitted. An input/output unit initiates a transmit operation by forcing a first control line to a predetermined state which causes scanning apparatus to stop when it encounters the line of the active unit. In accordance with the state of the scanning circuits, control circuits enable the control lines of the selected active input/output unit for a data transfer operation and disable the control lines of all remaining units. The multiplexing apparatus permits the data processing unit to initiate a transaction with an input/output unit by transferring all of the message signals transmitted by the data processing unit to each of the input/output units simultaneously. When the input/output recognizes its address within the message signals, it initiates a transmit operation by forcing the first control line to the predetermined state.

3,826,873

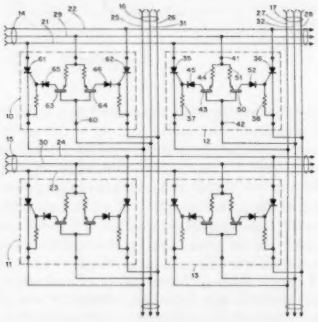
SWITCHING CIRCUIT EMPLOYING LATCHING TYPE SEMICONDUCTOR DEVICES AND ASSOCIATED CONTROL TRANSISTORS

A. Frederick Susi, Dedham, Mass., assignor to GTE Sylvania Incorporated, Stamford, Conn.

Filed Oct. 12, 1971, Ser. No. 188,166

Int. Cl. H04g *3/50*

U.S. Cl. 179—18 GF **4 Claims**



Crosspoint switching array, each crosspoint switching circuit including silicon controlled switches for connecting signal lines of one group of transmission lines to signal lines of another group. For each silicon controlled switch a transistor having its collector connected through a blocking diode to the gate electrode is connected between control lines of the two groups of lines. Coincident pulses on the control lines cause current to flow in the transistors thereby switching the silicon controlled switches to conduction and providing signal paths between the two groups of lines.

3,826,874

METHOD AND APPARATUS FOR EFFECTING JUMP HUNTING IN STEP-BY-STEP TELEPHONE SWITCHING SYSTEMS

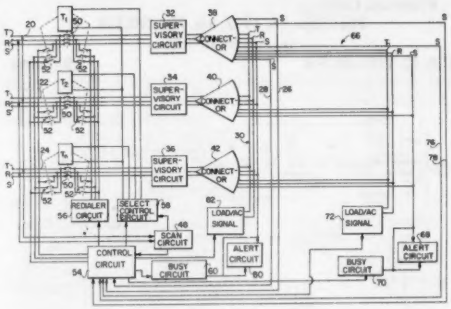
James Evans Fleming, Fairfax, Va., assignor to Air Land Systems, Fairfax, Va.

Filed Apr. 19, 1973, Ser. No. 352,751

Int. Cl. H04q *3/62*

U.S. Cl. 179—18 HA **13 Claims**

A novel apparatus is disclosed by which the hunting capabilities of a connector in a step-by-step telephone switching system is greatly expanded, the step-by-step telephone switching system being of the type wherein a call is progressively routed by dial pulses from an electro-mechanical line finder or an incoming trunk through selector stepping apparatus of an exchange into a group of electro-mechanical stepping switches constituting the connector to which is coupled a group of subscriber lines, the position of the connector switch brush on the terminals being determined by the dial pulses to effect a connection between a line of the calling and a line of the called subscriber. The apparatus of the instant invention comprises intercept means which serves to intercept the call at the connector switch terminal and release the switch, re-dialer means for automatically generating dial pulses representative of a different subscriber line terminal on the



connector switch, and means for effecting reconnection of the calling line to the brush, thus connecting the call to a different subscriber line through the connector switch. By means of the apparatus disclosed herein, an individual business or residence telephone line can become the directory number of a small hunting group in a step-by-step switching system, even though the telephone numbers consecutive to the individual line directory number are not available for use in the hunting group. Also, a sub-group of numbers may be added to a hunting group without requiring the added numbers to be consecutive to the numbers of the lines in the original hunting group.

3,826,875

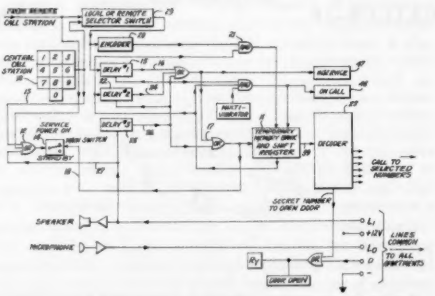
AUTOMATIC SECURITY COMMUNICATIONS SYSTEM

Antonio A. Puig, 7737 Riverdale Rd., No. 204, New Carrolton, Md. 20784

Filed June 14, 1973, Ser. No. 370,029

Int. Cl. H04m *11/02*

U.S. Cl. 179—37 **3 Claims**

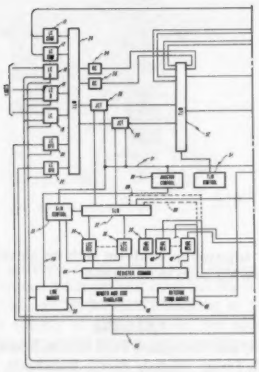


An automatic communication system adapted to provide security communications within an apartment building is provided to include a plurality of time delay circuits to automatically discontinue the ringing of an unanswered phone and to terminate the call when the receiver is not hung up.

3,826,876
MESSAGE WAITING AND DO-NOT-DISTURB

Klaus Gueldenpfenning, Penfield; Uwe A. Pommerening, and Stanley L. Russell, both of Webster, all of N.Y., assignors to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Apr. 17, 1973, Ser. No. 351,885
Int. Cl. H04m *3/42*
U.S. Cl. 179—84 C 14 Claims

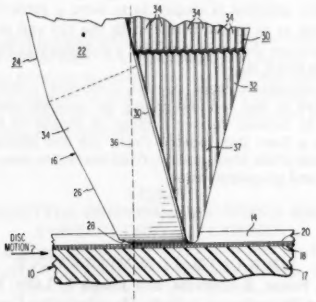


A message waiting and do-not-disturb circuit for a PBX in which the line circuit designation automatically forwarded to the number display for each operator position when the operator connects to that line circuit is used to automatically access the one of a plurality of line unit stores associated with the line circuit to monitor the message waiting and do-not-disturb status of the line circuit and permit a changing of this status without need for special dialing.

3,826,877
INFORMATION PLAYBACK SYSTEM STYLUS

Marvin A. Leedom, Princeton, N.J., and Michael Evans Miller, Indianapolis, Ind., assignors to RCA Corporation, New York, N.Y.

Filed Sept. 6, 1972, Ser. No. 286,657
Int. Cl. G11b *11/06*
U.S. Cl. 179—100.1 B 6 Claims

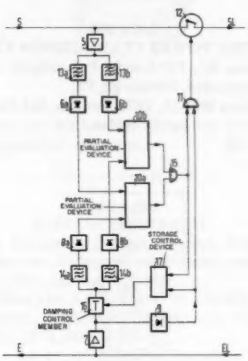


A video disc playback system includes a pickup stylus which is adapted to track in a groove in a disc record. The record comprises a molded thermoplastic substrate supporting a conductive surface with a dielectric coating disposed over the conductive surface. When relative motion is established between the disc record and the pickup, the pickup stylus cooperates with the disc record to establish capacitance variations between the stylus and the record due to geometrical variations in the bottom of the groove. The stylus includes a support element having an irregular surface with a conductive element disposed on the irregular surface. The support element is shaped in a manner such that when it engages the record medium groove, an edge of the conductive element is adjacent the dielectric coating.

3,826,878
ECHO SUPPRESSOR FOR A SPEECH CIRCUIT IN A FOUR-WIRE TRANSMISSION SYSTEM

Hermann Bendel, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Germany

Filed Oct. 20, 1971, Ser. No. 191,011
Claims priority, application Germany, Nov. 3, 1970, 2054073
Int. Cl. H04b *3/20*
U.S. Cl. 179—170.6 4 Claims



An echo suppressor for a speech circuit in a four-wire transmission system is inserted into the two transmission directions which are regarded as a transmission path and a receiving path, respectively, with respect to a hybrid connecting the four-wire system to a two-wire system. The echo suppressor has a suppression member connected in the transmission path and controlled with the help of transmission side and receiving side speech detectors. Each of the speech detectors includes filtering means defining at least two speech frequency ranges, and means are provided for controlling the operation of the suppression member in response to speech signal detection wherein detection of speech signal conditions does not necessarily effect or eliminate suppression in the transmitting path.

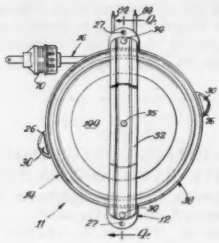
3,826,879
RETRACTABLE ELECTRIC CORD REEL

William H. Penn, and Gerald J. Eicher, both of Bloomington, Ill., assignors to National Union Electric Corporation, Greenwich, Conn.

Filed Dec. 20, 1972, Ser. No. 316,683
Int. Cl. H02g *11/02*
U.S. Cl. 191—12.4 17 Claims

A retractable cord reel assembly comprises a stationary bracket and a cord reel having a pair of metal flanges which sandwich a non-conductive hub. Each of the flanges has a dished portion, one of the dished portions containing spring motor means for rewinding an electric cord on the reel and the other dished portion containing contact means for making

electrical contact between a rotating end of the cord and stationary wires on the cord reel assembly. The cord reel assembly is compact and is constructed to minimize possibility of transferring an electrical shock to its user.



3,826,880

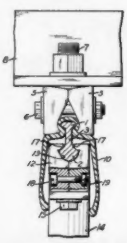
ELECTRIC POWER TRANSMISSION SYSTEM

Donald R. Ross, Sr., Pittsburgh, Pa., assignor to U-S Safety Trolley Corporation, Pittsburgh, Pa.

Filed May 25, 1973, Ser. No. 364,016

Int. Cl. B60m *1/04*

U.S. Cl. 191—25 **1 Claim**



An overhead metal trolley rail has a head for supporting it, separated by a vertical web from a foot that projects from opposite sides of the web and has a transversely curved lower contact surface. Slidable along the rail is a trolley shoe formed from a block of electrical conducting material, the upper portion of which has a longitudinal trough in it receiving the foot of the rail. The lower portion of the trough is curved transversely to engage the rail, and the opposite sides of the upper portion of the trough project toward each other above the foot of the rail to prevent separation of the shoe from the rail.

3,826,881

ADJUSTABLE RAIL SUPPORT

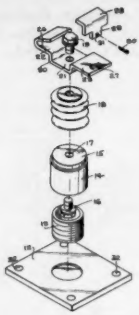
Arthur James Spiringer, Lynchburg, Va., assignor to H. K. Porter Company, Lynchburg, Va.

Filed Jan. 5, 1973, Ser. No. 321,138

Int. Cl. B60m *1/30*

U.S. Cl. 191—32 **5 Claims**

A vertically adjustable insulating support for the third rail of an electrified transit system which includes an assembly of an insulator body with means at its top end for supporting a current conductor rail and at its bottom end for axially adjusting the overall height of the support to thereby vary the elevation of the rail as necessary. The rail supports of the invention eliminate the necessity for shimming and are adjustable to conform with deviations in elevation of the rail supporting ties or bed of the transit system. Provision is included for quick-detachable demounting of the rail from the support so that the latter may be adjusted to conform with tie elevation changes after the system has been in operation.



3,826,882

ELECTRIC KEYBOARDS FOR OFFICE MACHINES

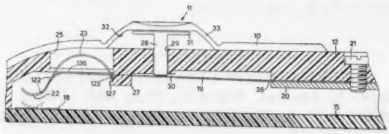
Nicolo Giolitti, Ivrea; Michele Bovio, Banchette, and Claudio Dalmasso, Ivrea, all of Italy, assignors to Ing. Co. Olivetti & Co., S.p.A., Ivrea (Torino), Italy

Filed Sept. 5, 1972, Ser. No. 285,970

Claims priority, application Italy, Sept. 6, 1971, 69944/71; Dec. 2, 1971, 70957/71

Int. Cl. H01h *9/00, 21/04*

U.S. Cl. 200—5 A **11 Claims**



An electric keyboard includes a plurality of depressible keys each key having at least one movable contact for bearing on a fixed contact. The movable contact of each key is acted by the pressure exerted on a corresponding key-shank. A layer of deformable material is shaped as to form a projection over each shank so as to seal hermetically the key and to define a cavity between the projection and a stationary guide plate in which the shank moves.

Each movable electric contact comprises a thin flexible blade fixed at one end and having the opposite end bent to provide an arcuate contact surface. A tongue of the blade bears on a fixed stop located above the line joining the attached end of the blade and the fixed contact to snap between a closed and an open position.

3,826,883

LOCK-OUT BALL BUMPER SWITCH

Colin E. Foster, Bensonville, and Joseph E. Lally, McHenry, both of Ill., assignors to Bally Manufacturing Corporation, Chicago, Ill.

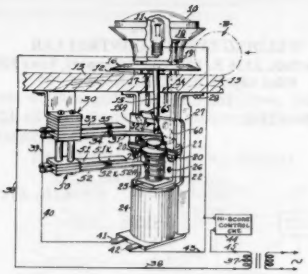
Filed Sept. 5, 1972, Ser. No. 286,003

Int. Cl. H01h *3/16*

U.S. Cl. 200—61.11 **14 Claims**

A ball bumper and switch means for pinball games and the like, wherein a blade switch is actuated by a pendantly rocked stem attached to a ball-rocked wafer or other target element.

The improvements reside in a simple lock-out action between the stem and switch element which causes the switch to remain in operated condition until a resetting action is effected. Optionally, the lock-out action may be made

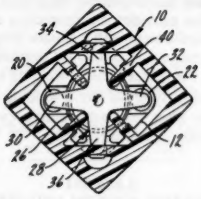


directionally selective so that the switch means can be actuated by ball impact from any direction but the lock-out action will be effected only by impacts occurring in predetermined directions. A variety of game circuits and scoring arrangements can be controlled by the novel bumper switch means.

3,826,884
KEYBOARD SWITCH

Raymond F. Lewandowski, Mt. Prospect, Ill., assignor to Oak Industries Inc., Crystal Lake, Ill.

Filed June 25, 1973, Ser. No. 373,505
Int. Cl. H01h *13/52*
U.S. Cl. 200—159 R **18 Claims**



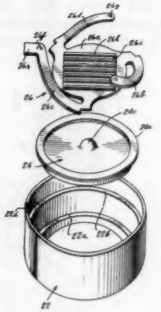
A low profile pushbutton switch has a button telescopically mounted on the base. A contact having a plurality of arms is positioned between the button and the base, with one group of arms being disposed to make contact with terminals within the base and another group of arms being positioned to receive the actuating force from the button.

3,826,885
PUSHBUTTON SWITCH HAVING SPIDER-SHAPED CONTACT CONTACT CARRIER

William J. Allen, Stratford, Conn., and Walter M. Tomasulo, Jr., Wayne, N.J., assignors to Wild Rover Corp., Norwood, N.J.

Filed June 23, 1972, Ser. No. 265,452
Int. Cl. H01h *13/52, 1/06*
U.S. Cl. 200—159 B **17 Claims**

An electrical switch utilizing a diaphragmtype contact element. The contact element includes a central contact-making portion and leg portions flexibly attached thereto that extend partially circumferentially about the central portion and out of the plane of the central portion. The contact element is prebiased by pre-flexing the legs so that a predetermined



threshold force must be exceeded before any movement of the contact-making portion takes place.

3,826,886
CONTACT MATERIAL

Toshito Hara, Kawasaki; Hiroaki Tanaka, Yokohama, and Shoichi Shimosato, Kawasaki, all of Japan, assignors to Fujitsu Limited, Kanagawa-ken, Japan

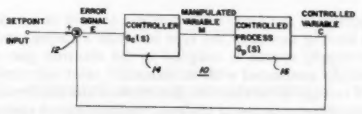
Filed Apr. 5, 1972, Ser. No. 241,326
Claims priority, application Japan, Apr. 15, 1971, 46-23468; Aug. 30, 1971, 46-66425
Int. Cl. H01h *1/02*; **C22c** *5/00*
U.S. Cl. 200—266 **3 Claims**

A contact material having a high durability is prepared from an alloy consisting of 45 to 85 percent by atom of palladium and 55 to 15 percent by atom of aluminium.

3,826,887
SIMPLIFIED PROCEDURE FOR TUNING PID CONTROLLERS

Troy J. Pemberton, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 29, 1971, Ser. No. 213,699
Int. Cl. H05b *1/02*
U.S. Cl. 219—497 **15 Claims**

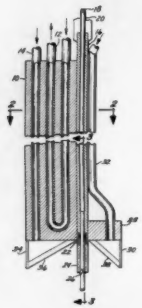


Simplified procedures for tuning a PID controller are disclosed wherein variable circuit elements in the reset and rate networks are mechanically ganged together to permit simultaneous and proportionate control of the circuit parameters in those two networks.

3,826,888
DEEP NARROW GAP WELDING TORCH

Gerald Garfield, and Cecil H. Rout, both of Seal Beach, Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Mar. 5, 1973, Ser. No. 338,104
Int. Cl. B23k 9/16
U.S. Cl. 219—74 **5 Claims**

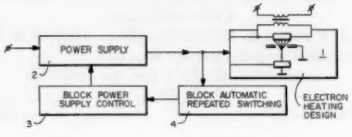


A welding torch adapted for welding deep narrow gaps wherein shielding gas diffusers fit inside the welding groove, a plastic liner is placed deep inside the torch so electric contact between the filler wire and contact tube is close to the exit, and a zirconia oxide insulation prevents torch contact with the gap walls.

3,826,889
SYSTEM FOR AUTOMATIC CONTROL OF ELECTRON BEAM HEATING DEVICE

Igor Pavlovich Brukovsky, I Mosfilmovsky pereulok, 5, korpus 2-B, kv. 16; Pavel Borisovich Yakolvlev, ulitsa Tolvukhina, 9, korpus 1, kv. 15, and Kirill Davidovich Gutterman, Tverskaya-Yamskaya ulitsa, 29, kv. 8, all of Moscow, U.S.S.R.

Continuation-in-part of Ser. No. 80,235, Oct. 12, 1970, abandoned, which is a continuation of Ser. No. 836,449, June 25, 1969, abandoned. This application Aug. 11, 1971, Ser. No. 170,915
Int. Cl. B23f 15/00
U.S. Cl. 219—121 EB **3 Claims**

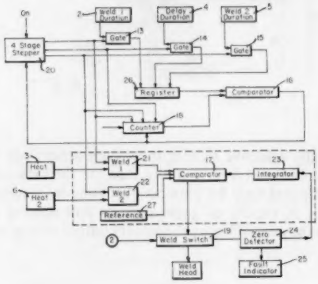


A system is disclosed for automatic control of an electron beam heating device of the type in which a current-stablized power-supply source is coupled to the electron gun and is electrically connected with an automatic reset unit serving to cut off voltage to the electron gun upon an electric breakdown between the electrodes of the gun. The automatic reset system does not operate immediately following the breakdown between the electrodes of the gun, but only after a predetermined time interval to allow the voltage across the electron gun to return spontaneously to the original value when the discharge between the electrodes of the electron gun is unsteady in character. After voltage cut off, if the electrical breakdown still has not been corrected, the automatic reset system successively operates at different time intervals to cut off electron gun voltage. Specifically, and in the preferred embodiment, the instant inventive system is so designed that the time interval between the occurrence of voltage cut off as a result of electric breakdown and the occurrence of the subsequent automatic reset of the apparatus becomes increasingly larger during successive operation of the system.

3,826,890
WELDING SYSTEM CONTROLLER

Peter G. Bartlett, 2336 E. 11th St., Davenport, Iowa 52803

Filed Sept. 1, 1972, Ser. No. 285,797
Int. Cl. B23k 9/10
U.S. Cl. 219—131 R **12 Claims**

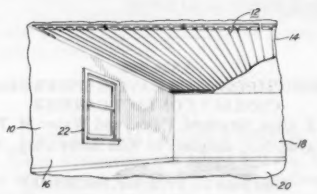


A welding system controller for use with square hystersis loop welding transformers. The controller allows for at least two time-spaced welding operations to be performed, each of the welding operations having its time duration and heat intensity independently selected. Although heat intensity is a non-linear function, a novel phase control circuit for the welding transformer switches enables a linear heat intensity control to be used for selecting the heat intensity. This is desirable for linear selectors are less expensive than non-linear selectors. The controller also provides the protective circuit necessary when welding transformers with a square loop hystersis curve are used. Furthermore, the controller provides for a modified phase control for the initial cycle of welding as is also necessary when square loop hystersis curve welding transformers are used. In addition after the last welding cycle a controlled return to quiescent conditions is made.

3,826,891
SPACE HEATING SYSTEM AND STRUCTURE

Richard P. Dugger, South Bend, Ind., assignor to Ristance Wire, Inc., Bremen, Ind.

Filed Feb. 7, 1973, Ser. No. 330,431
Int. Cl. H05b 1/00
U.S. Cl. 219—213 **5 Claims**



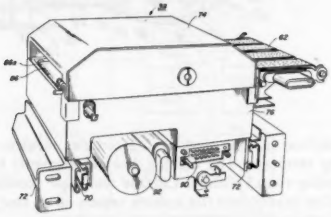
A space heating system for rooms and other building spaces having a ceiling or wall surface, in which a plurality of strands or sections of insulated resistance wire is strung along the ceiling or wall surface and secured thereto by fixtures at the ends

of the sections and by spaced tape or the like along the sections adhered to the surface. The resistance wire, including the insulation, is not more than 0.075 inches, and the fixtures which hold the wire at the ends are preferably secured to the surface by an adhesive material. A thin coating of plastic or synthetic plaster-like material, preferably sprayed on the surface, covers the wires and fixtures, and forms a smooth surface concealing said heating wire and fixtures.

3,826,892
FUSING APPARATUS

Vaidevutis C. Draugelis; George N. Tsilibes, and John E. Vineski, all of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 25, 1972, Ser. No. 300,531
Int. Cl. H05b *1/00*
U.S. Cl. 219—216 **11 Claims**



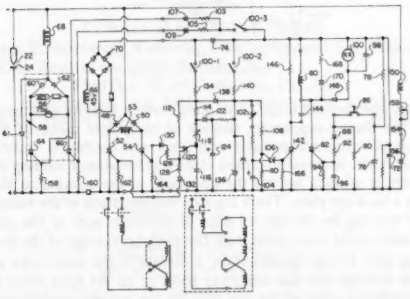
An apparatus in which a powder pattern deposited on a support material is permanently affixed thereto. The support material is heated during the movement thereof into thermal communication with a radiant energy output. In this manner, the powder pattern is coalesced and fixed permanently to the support material.

The foregoing abstract is neither intended to define the invention disclosed in the specification, nor is it intended to be limiting as to the scope of the invention in any way.

3,826,893
SINGLE PHASE T-R UNIT

Paul A. Glorioso, Amherst, Ohio, assignor to TRW Inc., Cleveland, Ohio

Filed Nov. 12, 1971, Ser. No. 198,145
Int. Cl. B23k *9/00, 9/04*
U.S. Cl. 219—98 **5 Claims**

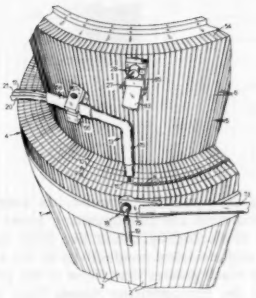


A solid state control circuit and an alternating current power source for stud welding apparatus are provided. The controls utilize a sustaining arc to maintain electrical continuity, and apply pulsating DC as a source for the main welding arc and filtered DC for use in the initiation and timing circuit. The pulsating direct current is phase controlled to regulate the intensity of the main welding arc.

3,826,894
SPOT WELDING APPARATUS FOR WELDING END CONDUCTORS IN CYLINDRICAL ELECTRICAL MACHINE ELEMENTS

Raymond C. Melvin, Elm Grove, Wis., assignor to Harnischfeger Corporation, W. Milwaukee, Wis.

Filed June 6, 1973, Ser. No. 367,552
Int. Cl. B23k *9/12*
U.S. Cl. 219—124 **25 Claims**



A spot welding apparatus connects the coil end strips to commutating bars of an armature. A mixture has a rotating base supporting the armature at the end opposite the commutator. An adjustable top support locates a spot welding torch in proper alignment to the bar and with a spring loaded ground slidably engaging the same bar. The torch includes a two percent thoriated tungsten electrode having a tapered or pencilled tip terminating in a blunt or flat end. A high frequency, co. ant potential D.C. power supply is connected to the torch and maintains power instantly available to the electrode and ground under the control of a timer. A helium shield arc is created. A position sensor carried by the top support has a pair of conductive plungers axially aligned with and slidably engaging with the commutator bars to produce an on-off control as the plungers pass over an insulator between the bars. The sensor is connected to actuate the timer which operates the power supply to strike an arc for a predetermined time. A plurality of radially distributed spot welds are provided on each bar by a series of traverses or passes about the commutator. The ends of the coils of a wound rotor may also be similarly joined by spot welds automatically created by the method and apparatus.

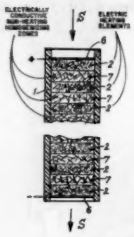
3,826,895
ELECTRICAL FLUID HEATING DEVICE

Hermann J. Schladitz, Munich, Germany, assignor to Schladitz-Whiskers A.G., Zug, Switzerland

Filed May 8, 1973, Ser. No. 358,344
Claims priority, application Germany, May 10, 1972, 2222849
Int. Cl. H05b *3/10;* **F24h** *1/10*
U.S. Cl. 219—382 **3 Claims**

An electric heating device for heating flowing fluid includes a tubular body of electrical insulation material adapted for

through flow of the media. A plurality of porous electric heating elements of disc-like form electrically connected in series span the tube at intervals and are arranged in series in the direction of flow. Each heating element is pervious to fluid flow and is comprised of electrically conductive fibers or whiskers felted together. The heating elements are interspersed with non-heating homogenizing zones located between adjacent heating zones. In one embodiment each



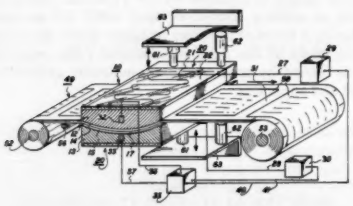
homogenizing zone merely comprises an empty space. In another embodiment the homogenizing zones comprises a porous mass of electrically conductive fiber skeletons. The pore volume and electrical conductivity of the homogenizing mass are very much greater than those of the porous heating elements and the homogenizing masses form the electrical connections whereby the heating elements are connected electrically in series.

3,826,896

DRY FILM DEVELOPING APPARATUS

David M. Thompson, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed July 9, 1973, Ser. No. 377,888
Int. Cl. F27b *9/06*
U.S. Cl. 219—388 **10 Claims**



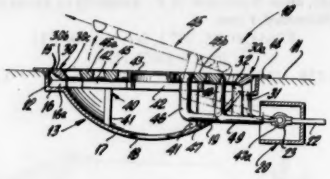
A platen for developing a web of exposed dry film by bringing sequentially discrete areas upon the film into contact with a heated platen. The platen surface is specifically constructed to offset wrinkling produced in the film at the thermal boundaries to the development zone.

3,826,897

SURFACE HEATING UNIT HAVING SELECTIVE CONCENTRIC ELECTRIC SHEATHED HEATING ELEMENTS

Robert D. Behr, and Seiko K. Behr, both of 110 Queen St., Chestertown, Md. 21620

Filed Mar. 23, 1973, Ser. No. 344,273
Int. Cl. H05b *3/68*
U.S. Cl. 219—456 **16 Claims**



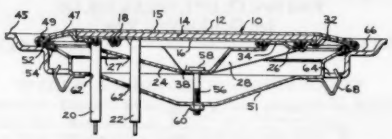
A surface heating unit having circular electric sheathed heating elements. The electric heating elements selectively supporting round-bottom, Chinese wok-type cooking vessels as well as cnventional flat-bottom vessels on an electric range top or other such installation.

3,826,898

BORDER TREATMENT OF COMPOSITE METAL PLATE SURFACE HEATING UNIT

Bohdan Hurko, and Raymond L. Dills, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.

Filed Nov. 28, 1973, Ser. No. 419,593
Int. Cl. H05b *3/68*
U.S. Cl. 219—462 **9 Claims**



A low thermal mass, solid plate surface heating unit having a top utensil-supporting surface of composite metal of high thermal conductivity and corrosion and oxidation resisting materials. A metal sheathed electrical resistance heating element is pressed against the underside of the composite plate by a back-up plate. There are two modifications of the manner of spacing the peripheral edge of the inner core of the composite metal plate back from the peripheral edge of the heating unit. In one modification, a margin of the inner core and the bottom skin are cut away so as to be set back from the peripheral edge of the top skin. In the second modification, the top and bottom skins of the composite plate are sealed over the edge of the inner core. Then the peripheral edge of the back-up plate is brought out beyond the peripheral edge of the composite plate and a trim strip is wrapped around the edge of the back-up plate and the edge of the top skin and sealed therebetween.

3,826,899

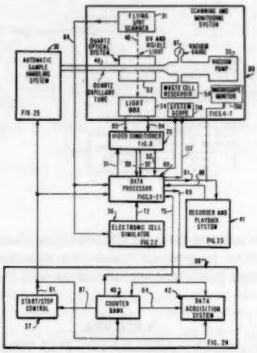
BIOLOGICAL CELL ANALYZING SYSTEM

Melvin P. Ehrlich, Roslyn Estates, L. I., N.Y.; Milton Stoller, West Hartford, Conn.; Stanley Grand, Westbury, L. I., and Robert De Cote, Flushing, both of N.Y., assignors to Nuclear Research Associates, Inc., New Hyde Park, N.Y.

Division of Ser. No. 850,547, Aug. 15, 1969, Pat. No. 3,699,336. This application Aug. 23, 1972, Ser. No. 283,074

Int. Cl. G06m 11/02

U.S. Cl. 235—92 PC 53 Claims



A biological cell analyzing system which is capable of automatically categorizing unstained biological cells as normal or non-normal. The cells are made to flow through a transparent tube in single file and are scanned with a mixture of ultraviolet and visible light. The cytoplasm and nucleus of each cell absorb ultra-violet radiation to different degrees, and the emergent light signal, as modulated by the scanned cells, is detected, amplified, and extended to a data processor which logically analyzes the signal from each cell on a real-time basis. The visible light signal is subtracted from the ultra-violet light signal to improve the signal/noise ratio of the latter, and to automatically cancel out non-biological debris. A number of acceptance tests are electronically performed on each cell, and if any of the tests is failed the cell is categorized as non-normal. Ambiguous conditions, resulting for example from the clumping of cells, are identified and separately counted. The system can process up to several thousand cells from a single sample during a 1-minute run.

3,826,900

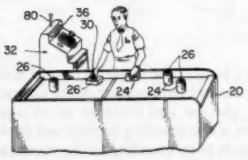
CORDLESS SCANNING PROBE

Edgar E. Moellering, Kettering, Ohio, assignor to The National Cash Register Company, Dayton, Ohio

Filed Oct. 13, 1972, Ser. No. 297,353

Int. Cl. G06k 7/14; G01n 21/30; G06k 9/14, 19/06

U.S. Cl. 235—61.11 E 2 Claims



In the present invention an optical decoding system employs a hand-held, optical probe scanner, for optically reading coded information from labels affixed to pieces of merchandise. The optically read code is converted into electrical energy and transmitted by a radio transmitter located within the probe to a local receiver for processing. The processed signals are then used to control a registering business machine such as a sales register, accounting machine, or other such device.

3,826,901

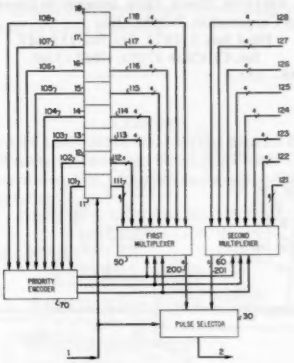
TIME MULTIPLEXED RATE MULTIPLIER

Ian T. Band, Los Altos, and Kenneth J. MacLeod, San Jose, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 12, 1973, Ser. No. 405,947

Int. Cl. G06f 15/20

U.S. Cl. 235—150.3 17 Claims



Outputs from a plurality of pulse counters are time multiplexed in a sequence determined by detection of individual pulse counters being in a selected counting state. The time multiplexed counter outputs control a pulse selector which acts as a gate to rate multiply an applied input signal in response to the time multiplexed counter outputs and control word outputs from a control word source.

3,826,902

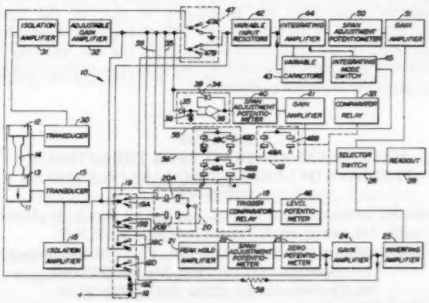
STRESS-STRAIN AND AREA READOUT INSTRUMENT

William E. Claxton, Mogadore, and James E. Hollow, Cuyahoga Falls, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Apr. 16, 1973, Ser. No. 351,397

Int. Cl. G06g 7/24

U.S. Cl. 235—151.3 13 Claims



Disclosed is an instrument for calculating and reading out various parameters of tensile testing results. The instrument

receives an input signal from the testing apparatus whose voltage is proportional to the elongation of the sample being tested and another input signal whose voltage is proportional to the force to which the sample is subjected. At the point of sample breakage the maximum elongation of the sample and maximum force applied to the sample is readily determined and signals proportional thereto are fed to a readout device. The instrument also includes means to calculate and display an indication of the work necessary to break the sample and in the event of cyclic testing, the area within the hysteresis loop resulting when the force is removed from the sample.

3,826,903

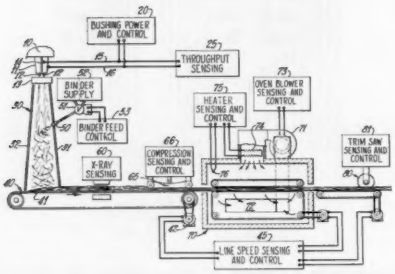
METHOD AND APPARATUS FOR CONTROL OF CONDITIONS IN A PROCESS

Eugene C. Varrasso, Heath, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Jan. 3, 1972, Ser. No. 215,047

Int. Cl. C03b *37/00*; **G06f** *15/46*

U.S. Cl. 235—151.1 **28 Claims**



The invention is disclosed herein in a method and apparatus for manufacturing a glass fiber mat. A fiber collecting surface is moved past a fiber deposition station. Glass fibers are provided, deposited, and processed in a mat-like mass on the collecting surface. Data is processed in a data processing means to obtain values representing the difference between the actual conditions and the desired conditions of the plurality of variables involved in the providing, depositing, and processing of the glass fibers to obtain a finished glass fiber mat with desired characteristics. The data processing means provides an operation change signal for at least one of the variables indicating the change necessary in a final control device for that one variable to eliminate a deviation between an actual and a desired condition for the variable. The operation change signal is stored in a supervisory control for the one variable, enabling more time for processing of data in the data processing means for the other variables being controlled. The operation of the final control device for the one variable is modified an amount dictated by the operation change signal stored in the supervisory control.

3,826,904

METHOD AND APPARATUS FOR THE OPTIMUM BLENDING OF LUBRICATING BASE OILS AND AN ADDITIVE

John M. Leonard, Houston, Tex., and John S. Lewis, Jr., Huntsville, Ala., assignors to Texaco Inc., New York, N.Y.

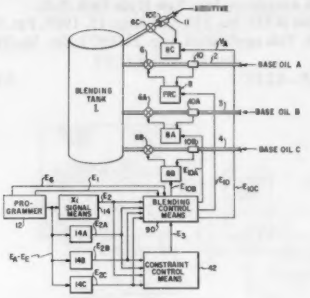
Continuation of Ser. No. 90,244, Nov. 17, 1970, abandoned.

This application Oct. 4, 1972, Ser. No. 295,060

Int. Cl. G01n *25/46*; **F23m** *5/00*; **G06p** *15/46*

U.S. Cl. 235—151.1 **3 Claims**

A method and apparatus for enabling the computation of a minimum cost blend of lubricating oil base stocks, wherein a viscosity index improver additive is included. System includes measurement of viscosity and related data at two separate concentrations of the additive where such concentrations are in the range from about 1 percent to about 10 percent of the



additive with a given base oil. Data obtained are used in non-linear formulae to provide bases for calculating optimum blends to obtain particular specifications with minimum cost.

3,826,905

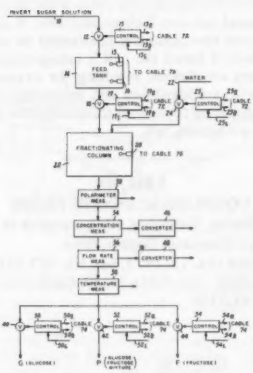
METHODS AND APPARATUS FOR PROVIDING AUTOMATIC CONTROL OF CHROMATOGRAPHIC FRACTIONATING PROCESSES

Aarne J. Valkama; Eero Sihvola, both of Helsinki; Risto V. Puttonen, Matinkyla; Rainer Nihtila, Kantvik; Matti Turunen, Kantvik, and Lauri Hamalainen, Kantvik, all of Finland, assignors to Suomen Sokeri Osakeyhtio, Helsinki, Finland

Filed Oct. 27, 1971, Ser. No. 192,881

Int. Cl. C13d *3/14*

U.S. Cl. 235—151.12 **8 Claims**



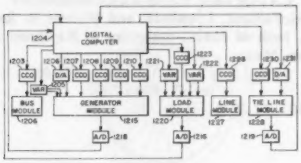
As disclosed herein, the angle of optical rotation, concentration, flow rate and temperature of the components such as, for example, glucose and fructose in an aqueous solution emerging from a fractionating process are continuously measured and signals corresponding to the measurements are fed to a computer. The computer calculates the instantaneous and/or average purity and/or the expected purity of the components and, when predetermined purity values are reached, the computer controls the distribution of the various fractions in accordance with a preset program.

3,826,906

DESK CONSOLE POWER SYSTEMS SIMULATOR WITH HANDS-ON CONTROL

Norman R. Carlson, Export; Victor Burtnyk, Monroeville, and William E. Zitelli, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 19, 1972, Ser. No. 254,957
Int. Cl. G06f *15/56*; G06g *7/62*
U.S. Cl. 235—151.21 32 Claims



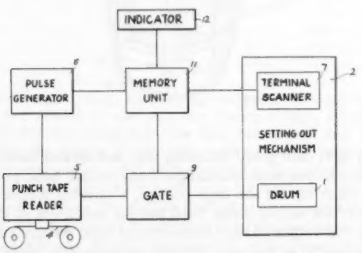
A DC loadflow calculator having transient stability analysis capability includes modularized DC circuits, an operator console and a device for producing transient fault signals. The DC circuits are interconnected to represent an electric power system and include modularized circuits representative of power system buses, generators, loads, tie lines and lines. The DC circuits are associatively connected to the operator console for the attainment of a loadflow solution in accordance with network variable signals provided to the DC circuits through the operator console. The operator console also provides for the connection of the transient fault signalling device to the DC circuits for imposition of transient fault signals thereon. The operator console also includes display devices for display loadflow and transient responses from the DC circuits.

3,826,907

ARRANGEMENT FOR MONITORING A PROGRAMMABLE CONTROLLER FOR A KNITTING MACHINE

Zdenek Milfait, Brno, Czechoslovakia, assignor to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi, Brno, Czechoslovakia

Filed Sept. 11, 1972, Ser. No. 287,814
Claims priority, application Czechoslovakia, Sept. 10, 1971, 6490-71
Int. Cl. G06f *11/00*
U.S. Cl. 235—153 AC 6 Claims



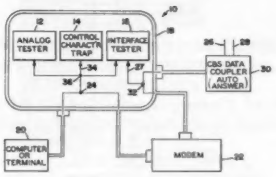
An arrangement for instantaneously monitoring both the entry of information into and the outpulsing of control signals from a multi-track programmable controller for a knitting machine is described. A first of three coded instructions on a tape represents the input information and is converted to a first pulse sequence, which is applied to a particular track of the controller and is simultaneously applied to a preset counter, wherein the erroneous entry into the counter of more pulses than the number corresponding to the first instruction is sensed as a first error indication in the form of an output pulse from the counter. If the input information is correctly entered, a second coded instruction on the tape is converted to a replica of the entered input information and is temporarily stored in a memory. A third coded instruction on the tape is then converted to scanning pulses for reading out the programmed bit states of the controller. The read-out sequence is compared with the stored replica of the input information, and any deviation therebetween is sensed as a second error indication. Both the first and the second error indications may be effective both to stop the then-current tape to pulse conversion and to activate an alarm indication.

3,826,908

DATA TELECOMMUNICATIONS ANALYZER

Luther V. Weathers; Karl I. Nordling, and Ronald C. Ruffner, all of Clearwater, Fla., assignors to Paradyne Corporation, Clearwater, Fla.

Filed Feb. 5, 1973, Ser. No. 329,899
Int. Cl. G06f *11/00*
U.S. Cl. 235—153 R 21 Claims



A protocol analyzer for monitoring line control characters in a binary synchronous data telecommunications system comprising a control character trap means having a character decode means and character memory means to decode and buffer any of a plurality of predetermined line control characters and a visual display means to selectively observe the buffered control characters. The analyzer also includes an interface test means to monitor and display standard EIA RS-232 control lines and DAA control line signals from the business equipment means and data communications lines respectively and an analog test means including visual and audio display means for monitoring data communications line signals.

3,826,909

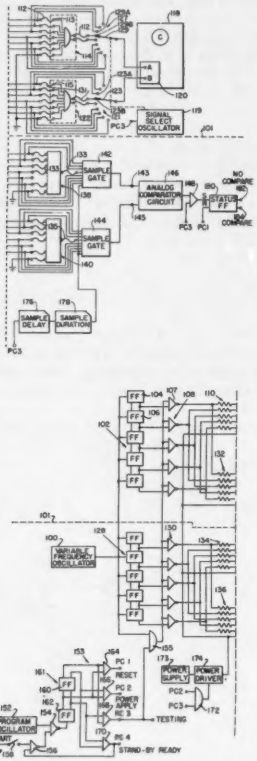
DYNAMIC COMPARISON TESTER FOR GO-NO-GO TESTING OF DIGITAL CIRCUIT PACKAGES IN NORMAL ENVIRONMENT

Victor S. Ivashin, Reno, Nev., assignor to The National Cash Register Company, Dayton, Ohio

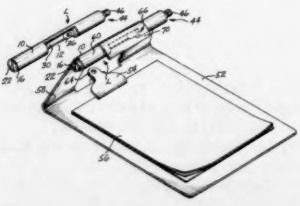
Filed Mar. 29, 1973, Ser. No. 346,174
Int. Cl. G06f *11/00*
U.S. Cl. 235—153 AC 10 Claims

A testing apparatus employing a binary counter to supply identical signals to a tested and a standard reference circuit is

disclosed. The tested includes a program controller, a self-contained power supply, analog and digital comparison circuits, along with output indicators for displaying the difference, if any, between the tested and standard reference circuit.

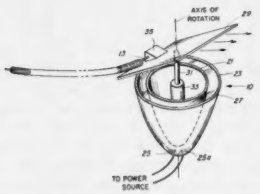


3,826,910
PORTABLE ELECTRIC TUBE LIGHT
Robert H. Davis, 19033 22nd Ave. N.W., Seattle, Wash. 98177
Filed June 7, 1971, Ser. No. 150,569
Int. Cl. F21v *33/00*
U.S. Cl. 240—6.4 B **7 Claims**



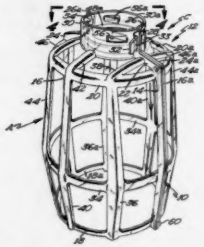
Dry cell batteries or battery forming materials are contained within end portions of an elongated tubular housing. The housing includes an elongated side window situated axially between the batteries. A reflector is provided along the inner wall of said tubing towards the window. A light bulb extending coaxially with the tube is positioned between the reflector and the window. The light may be secured to a support placing it generally above the writing portion of a clipboard or the like, and may be provided with a member extending from the support over the window region of the light, to serve as both a shield and a reflector for the light.

3,826,911
CATOPTRIC LENS ARRANGEMENT
Philip J. McFarland, Lynnfield, and Werner R. Rambauske, Carlisle, both of Mass., assignors to Raytheon Company, Lexington, Mass.
Filed July 2, 1973, Ser. No. 376,052
Int. Cl. F21v *7/00*
U.S. Cl. 240—41.35 R **4 Claims**



Improved catoptric lens arrangements are shown wherein a beam may be formed from light emitted by a plurality of sources of light, the intensity and direction of such beam being automatically controlled in response to the speed and direction of travel of a motor vehicle carrying such arrangements.

3,826,912
LIGHT BULB GUARD
James F. Pomroy, St. Paul, Minn., assignor to Plastics, Inc., St. Paul, Minn.
Filed May 4, 1973, Ser. No. 357,113
Int. Cl. F21v *15/00*
U.S. Cl. 240—102 R **9 Claims**



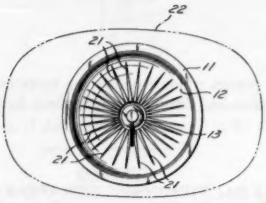
A light bulb guard including first and second identical half cage portions each including a semi-circular band portion on the inner end of the cage portion, a serrated tongue on one end of the semi-circular band portion and a slot in the other end, the tongue of each semi-circular band portion adjustably engageable in the slot of each semi-circular band portion together with a plurality of flexible fingers formed on and extending internally of the semi-circular band portions, and a recess formed in each semi-circular band portion for the reception of the rib of a light socket together with hook and recess means formed on the outer ends of each of the cage portions each engageable with the other.

3,826,913

DISTRIBUTIVELY BANDED REFLECTOR SURFACE FOR PRODUCING CONTOURED ILLUMINATION INTENSITY

Robert D. Downing, Mentor, and Emmett H. Wiley, Chesterland, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed May 24, 1973, Ser. No. 363,509
Int. Cl. F21v 7/09
U.S. Cl. 240—103 R 9 Claims



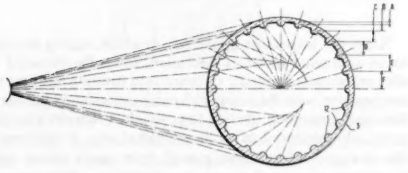
A concave light reflector is shaped to have flat-sectioned radial bands on its inner surface extending radially outwardly and forwardly from the apex of the reflector. The bands are distributed circumferentially in an asymmetrical manner to provide a desired cross-sectional contour of illumination intensity, such as approximately rectangular for photographic projection purposes.

3,826,914

LENS FOR A SIGNAL LAMP

John J. Bailey, and William C. Keeran, both of 1701 N. Ashland Ave., Chicago, Ill. 160622

Filed Nov. 21, 1972, Ser. No. 308,436
Int. Cl. F21v 5/04
U.S. Cl. 240—106 R 10 Claims



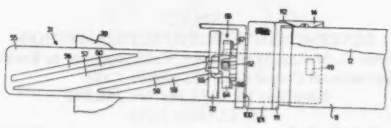
A lens for a signal lamp, such as an emergency or warning lamp, that is intended to surround the source of light, which source is preferably elongated. The lens has a wall that is curved about the center of the light, with an outer surface relatively smooth and an inner surface which is also relatively smooth, but is provided with a plurality of lenticular light spreaders spaced along the surface thereof at appropriate intervals such that a substantial portion of all of the light passing through the surface of the lens that is visible to the viewer will be directed from the source, either through the plane surface of the lens or through the lenticular light spreaders substantially to a common point. Thus, a viewer will have a substantial portion of all of the light rays emanating from the light source through the visible surface of the lens, directed to his eye throughout the entire width of the lens.

3,826,915

NON-IMPACT PRINTING DEVICE FOR ELECTRONIC CALCULATORS

Nicolo Giolitti, Ivrea, and Michele Bovio, Banchette, both of Italy, assignors to Ing. Co. Olivetti & Co., s.p.A., Ivrea (Torino), Italy

Filed Sept. 6, 1972, Ser. No. 286,801
Claims priority, application Italy, Sept. 6, 1971, 69943/71
Int. Cl. G01d 15/06
U.S. Cl. 346—74 E 17 Claims



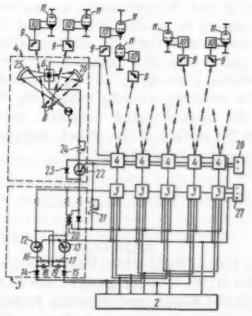
A non-impact printing device for electronic calculators is designed to print characters on electrosensitive paper by means of electrodes mounted on a printing head which moves across the paper for printing each line of characters and then returns to the starting point. A toothed rack in the form of a loop cooperates with a gear associated with the printing head and a driving motor for effecting the translatory motion. A platen includes a portion for line spacing comprising inclined guide tracks which cooperate with guides for advancing the paper in conjunction with the movement of the head. A further portion of the platen includes a cleaning roller over which the electrodes are swept during each cycle of movement for automatic cleaning.

3,826,916

MULTI-CHANNEL DEVICE FOR OPTICAL CONTROL OF CONVERTER BRIDGE RECTIFIERS IN D.C. TRANSMISSION LINES

Georgy Georgievich Sinchuk, ulitsa Rentgena 7, kv. 28, and Gennady Vasilievich Smirnov, Prospekt Nauki 14, korpus 4, kv. 9, both of Leningrad, U.S.S.R.

Filed July 2, 1973, Ser. No. 375,861
Int. Cl. H01j 39/12; H02m 1/02; H03k 3/42
U.S. Cl. 250—208 5 Claims



A multi-channel device is proposed for optical control of converter rectifiers in D.C. transmission lines comprising *n* identical channels, *n* being equal to the number of arms in a converter bridge, each channel including a shaper of wide square pulses connected in series with a pulse-width modulation converter of the light flux, all these elements being at the earth potential; as well as a photoreceptor and a control pulse amplifier which are connected in series at the rectifier potential, while the shaper of wide square pulses is provided with a

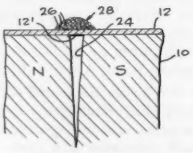
master pulse trigger which has its input connected to a primary pulse transmitter, and the pulse-width modulation converter of the light flux includes a single stage transistor amplifier whose input is coupled to said master pulse trigger and whose output is coupled to a semiconductor optical modulator serving to receive optical signals from a light flux emission source and to transmit modulated signals to an optical splitter which, in turn, feeds split signals to said photoreceptor at the potential of the gate.

3,826,917

REVERSE MAGNETIC INSPECTION METHOD

Orlando G. Molina, Westminster, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 16, 1973, Ser. No. 360,989
Int. Cl. G01n *21/16*
U.S. Cl. 250—302 **21 Claims**



Method for nondestructive magnetic inspection of an object for detecting defects and discontinuities in the surface thereof, by applying a coating, preferably an organic coating, containing a fluorescent material, to the object, establishing magnetic flux lines at an angle, preferably substantially perpendicular, to the suspected defects and discontinuities in a surface of the object, applying non-fluorescent magnetic particles, preferably suspended in a liquid medium, over the coating on the surface of the object, and causing these particles to agglomerate and form indications on the coating adjacent to the surface defects and discontinuities in the object, and inspecting the body under fluorescent or ultraviolet light to reveal such defects and discontinuities indications as defined by the agglomerated magnetic particles, against a contrasting fluorescent background coating. Where a record of the indications of defects and discontinuities is desired, a strippable fluorescent coating is initially applied, and following magnetization to locate and reveal the surface defects and discontinuities, a clear strippable coating is applied over the fluorescent coating containing the magnetic indications of defects, and the resulting coating containing the indications formed by the agglomerated magnetic particles can be stripped from the surface of the object, and such coating employed as a record of such indications.

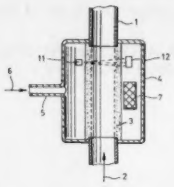
3,826,918

RADIATION-MEASURING INSTRUMENT WITH SURFACES SHIELDED AGAINST CONTAMINATION

Gerbrand Van Der Koogh, and Antonius P. Bernards, both of Alkmaar, Netherlands, assignors to Reactor Centrum Nederland, The Hague, Netherlands

Continuation-in-part of Ser. No. 179,351, Sept. 10, 1971, abandoned. This application Sept. 28, 1971, Ser. No. 184,409
Claims priority, application Netherlands, Sept. 10, 1970, 7013369
Int. Cl. G01n *23/02*
U.S. Cl. 250—343 **6 Claims**

Instruments for measurement of electromagnetic and/or corpuscular radiation in fluid media are liable to be contaminated by deposition of material from the fluid. The contamination of detectors, radiation sources or other vital surfaces in radiation measurement instruments is prevented by



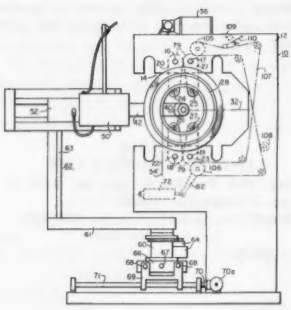
placing a porous window before the surfaces threatened by contamination and flowing a purging fluid through the porous window.

3,826,919

X-RAY TIRE INSPECTION APPARATUS

Nicholas Yaroshuk, McKeesport, and Robert D. Burack, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 8, 1972, Ser. No. 287,388
Int. Cl. G01n *23/00*
U.S. Cl. 250—360 **4 Claims**



X-ray tire inspection apparatus, in which, during set-up and in an automatic mode of operation, inwardly-retracted spindles are actuated radially outward into rotating and spreading cooperation with the beads of a newly introduced tire for capture and inspection of such tire, which is thereby also simultaneously measured as to its diametral size. Conditioned by the tire-size information gained from such initial spindle operation, a control means is operable to effect automatic movement of an X-ray tube and an X-ray image pick-up means from retracted inactive positions to active tire-inspecting positions suited to the particular tire size involved.

3,826,920

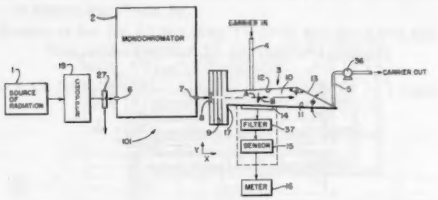
FLUORESCENT GAS ANALYZER WITH CALIBRATION SYSTEM

Jaime A. Woodroffe, Cambridge, and John P. Appleton, Andover, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Apr. 12, 1973, Ser. No. 350,431
Int. Cl. G01t *1/00*
U.S. Cl. 250—373 **30 Claims**

A fluorescence gas analyzer for the measurement of concentrations of NO, SO_2, CO, CO_2 and other gases that appear in relatively small concentrations in a carrier gas. The carrier gas is subjected to ultraviolet radiation at predetermined

wavelengths to effect fluorescence. The spectral wavelengths are chosen for the specific gas of interest. The intensity of the



fluorescent radiation from the gas of interest is a measure of the concentration of that gas (NO, SO_2, etc.) in the carrier.

3,826,921

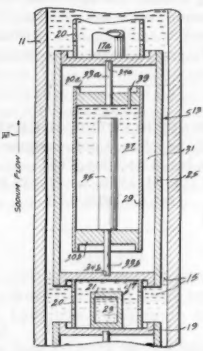
MONITOR FOR RADIATION-INDUCED HEATING

Walter R. Wallin, Idaho Falls, Idaho; Virgil W. Lowery, Gaithersburg, Md., and Richard R. Smith, Idaho Falls, Idaho, assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Apr. 26, 1973, Ser. No. 354,723

Int. Cl. G01t 1/12

U.S. Cl. 250—390 **9 Claims**



A susceptive material that is to be examined with respect to radiation-induced heating is sealed within a capsule composed of a material such as stainless steel. The remaining capsule volume is filled with a liquid metal that has a greater coefficient of thermal expansion than the capsule walls. The liquid expansion permanently deforms the capsule in an amount representative of its maximum temperature. The capsule is coaxially supported within an outer container, thus forming a gas-filled annulus having a known resistance to heat transfer. The heat generated by irradiation of the susceptive material is determined by the temperature difference required for its transfer across the annulus.

3,826,922

X-RAY FILM CASSETTE HOLDER

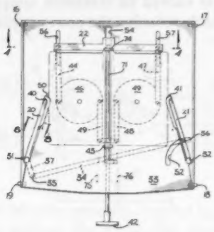
William R. Ingles, Glendale, Calif., assignor to American Medical International, Inc., Los Angeles, Calif., a part interest

Filed Apr. 9, 1973, Ser. No. 349,240

Int. Cl. G03b 41/16

U.S. Cl. 250—471 **5 Claims**

A holder for X-ray film cassettes which automatically centers the cassette under a predetermined area of an X-ray table irrespective of the size of the cassette. Spring loaded pivoting arms coupled by a linkage accomplish the longitudinal centering and a pair of linearly moving members, also coupled by a linkage and spring loaded, centers the cassette transversely.



The cassette holder is installed in a slot in the X-ray table under the Bucky diaphragm and can be adjusted to any desired longitudinal position under the table. Means for ejecting the cassette from the holder is disclosed.

3,826,923

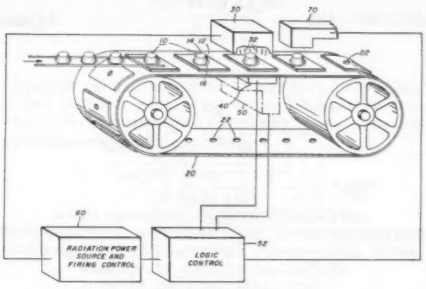
SYSTEM FOR DETECTING OPENINGS IN OPAQUE OBJECTS

Robert M. Trimble, Pittsburgh, and Nicolaas L. Brouwer, Apollo, both of Pa., assignors to Aluminum Company of America, Pittsburgh, Pa.

Filed June 6, 1973, Ser. No. 367,320

Int. Cl. G01n 21/32

U.S. Cl. 250—572 **7 Claims**



Minute openings in opaque objects are detected by intermittent discharges of stored energy in the form of high intensity radiation of preselected wavelength range determined by the type of material used to form the opaque object and the smallest opening size which must be detectable.

3,826,924

TEMPERATURE COMPENSATED THERMAL RELAY DEVICE

Charles T. Plough, Beaconsfield; Jan Otto Tvedt, Pierrefonds; Marcus Arts, Longueuil; H. Keith Eastwood, Beaconsfield, and Frank Woo, Dollard Des Ormeaux, Quebec, all of Canada, assignors to Multi-State Devices Ltd., Dorval, Quebec, Canada

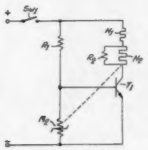
Filed May 21, 1973, Ser. No. 362,294

Int. Cl. H01h 37/00

U.S. Cl. 307—117 **17 Claims**

A temperature compensated thermal relay device comprises a thermal switching element exhibiting a sudden change

in impedance at a predetermined transition temperature from a first impedance state to a second impedance state, a heater adapted to be connected to a power source for heating the thermal switching element, and circuit means for initially supplying a large amount of power to the heater so as to make the switching element exceed its transition temperature quickly and for subsequently reducing the power applied to the heater



to maintain the thermal switching element a few degrees above its transition temperature. The circuit means also controls the power applied to the heater to stabilize the operation of the thermal switching element under varying ambient or operating temperature. The above circuit means permit to reduce the turn-on and turn-off times of the thermal switching element.

3,826,925

SWITCH ARRANGEMENT FOR AN OPTICALLY COUPLED ZERO VOLTAGE SWITCH

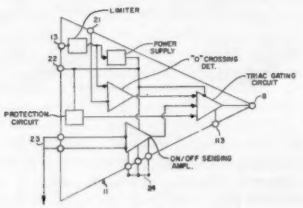
Horst Schweikart, Offenburg, Germany, assignor to Gehap Gesellschaft fur Handel und Patent verwertung mbH & Co. KG, Sasbachwalden, Germany

Filed Nov. 6, 1972, Ser. No. 304,184

Claims priority, application Germany, Nov. 5, 1971, 2154968

Int. Cl. H01h *7/16*

U.S. Cl. 307—133 **3 Claims**



A zero voltage switching circuit having a galium arsenide diode on its input terminals optically coupled to a phototransistor. The output of the phototransistor is coupled to the input of a zero voltage switch. The output of the zero voltage switch is coupled to the gate of a triac semi conductor switch so that an A-C power supply applied to the terminals of the triac can be switched at zero voltage.

3,826,926

CHARGE COUPLED DEVICE AREA IMAGING ARRAY

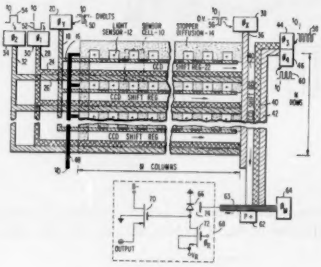
Marvin H. White, Laurel, and Gene Strull, Baltimore, both of Md., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

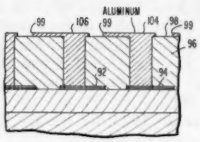
Filed Nov. 29, 1972, Ser. No. 310,514

Int. Cl. H03k *21/00, 28/08*

U.S. Cl. 307—221 **8 Claims**

A low light level self-scanned high resolution imaging array comprised of charge coupled devices. The charge coupled devices are used as either visible or IR sensors having a polycrystalline silicon transparent conductive gate electrode as well as a two phase stepped oxide aluminum electrode shift register. A unique cell geometry is disclosed together with its method of fabrication which is particularly adapted for an





area array making possible low light level sensitivity with "-blooming" suppression for use as a solid state TV camera. The entire signal processing and imaging is performed on a single semiconductor substrate preferably comprised of silicon.

3,826,927

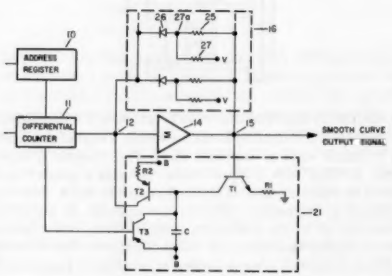
SMOOTH WAVE ELECTRICAL GENERATOR

Martin O. Halfhill, San Jose, Calif., assignor to Information Storage Systems, Inc., Cupertino, Calif.

Filed May 21, 1970, Ser. No. 39,385

Int. Cl. H03k *4/08*

U.S. Cl. 307—263 **5 Claims**



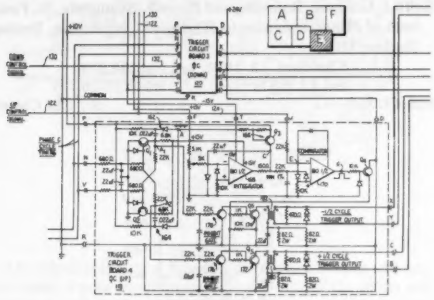
A wave generator for use in such apparatus as a disc file equipment control to provide a smooth wave having a predetermined configuration. The wave is generated by the use of an amplifier having a first feedback circuit for providing a stepped incremental signal with the value of the increments being responsive to the input signal of the amplifier. A second feedback circuit is provided for supplying to the amplifier input a signal which is the integral of the amplifier output and with a polarity opposite to that of the first feedback signal. In this manner, the incremental signal is smoothed to provide an output signal tangential to the bottom of each step of the incremental signal.

3,826,928

VARIABLE PULSE WIDTH GENERATOR EMPLOYING FLIP-FLOP IN COMBINATION WITH INTEGRATOR-DIFFERENTIATOR NETWORK

Jiri B. Bucek, and James R. Shultz, both of York, Pa., assignors to Fincor, Inc., York, Pa.

Division of Ser. No. 62,869, Aug. 11, 1970, Pat. No. 3,678,355. This application Mar. 27, 1972, Ser. No. 238,141
Int. Cl. H03k *1/18*
U.S. Cl. 307—265 1 Claim



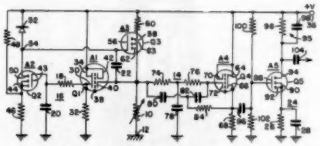
A control for a three phase A.C. motor elevator drive in which direction and desired speed signals, as dictated by customer and user demand, are electronically processed to provide intermediate ramp control signals. A summing circuit which utilizes the intermediate ramp control signal and a signal from an elevator motor speed and direction sensing circuit has an output which determines and controls the voltage input, via electronic trigger controls to thyristor controlled power and reversing switching circuits in at least two channels of the three phase A.C. input to a three phase A.C. drive motor. The motor control circuit incorporates a high rate of off-on and phase reversing switching with phase angle control of voltage and current to provide interrelated variable A.C. power supply for both drive and braking of the elevator drive motor in both directions of movement of the elevator cab.

3,826,929

GAIN STABILIZED SIGNAL PROCESSING CIRCUITRY FOR GROUND RESISTANCE SENSOR

Charles E. Hill, Lynn, Ind., assignor to Avco Corporation, Richmond, Ind.

Filed June 11, 1973, Ser. No. 368,795
Int. Cl. H03k *17/00*
U.S. Cl. 307—308 12 Claims



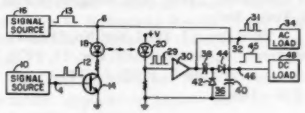
To detect whether an area is being intruded, a bare wire resistance sensor is placed on the surface of the earth and the change in resistance between the bare wire and earth is used to detect an intrusion. Circuitry is provided for maintaining a constant voltage drop across the ground resistance in spite of slow variations in resistance, while at the same time permitting the sensing of rapid changes. Spurious signals, which may result in false alarms, are attenuated by low pass filters in a succeeding AC amplifier.

3,826,930

FAIL-SAFE OPTICALLY COUPLED LOGIC NETWORKS

Robert H. Perry, Irwin, Pa., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed June 5, 1973, Ser. No. 367,255
Int. Cl. H03k *3/42*
U.S. Cl. 307—311 4 Claims



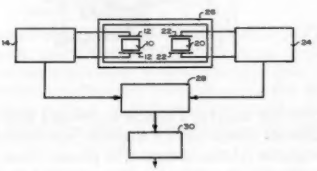
A plurality of fail-safe optically coupled logic networks are disclosed which perform the AND, OR, latching, and signal transfer function.

3,826,931

DUAL CRYSTAL RESONATOR APPARATUS

Donald L. Hammond, Los Altos Hills, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 678,384, Oct. 26, 1967. This application Feb. 8, 1971, Ser. No. 113,668
Int. Cl. H01v *7/00*
U.S. Cl. 310—8.1 6 Claims



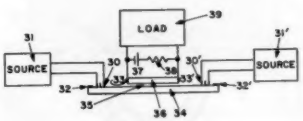
Algebraic combination of the frequencies of two or more selected modes of piezoelectric crystal resonator vibrations yields a total frequency signal output which has a substantially zero temperature coefficient of frequency.

3,826,932

AN ULTRASONIC CONVOLVER HAVING PIEZOELECTRIC AND SEMICONDUCTOR PROPERTIES

Wen-Chung Wang, 25 Trescott Path, Northport, N.Y. 11768

Filed Apr. 17, 1972, Ser. No. 244,429
Int. Cl. H01v *7/00*; H04r *17/00*
U.S. Cl. 310—8.1 3 Claims



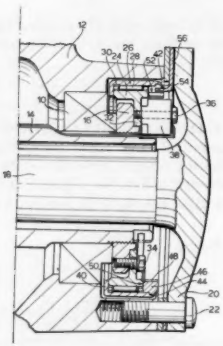
A device for performing the function of convolution comprises either a properly oriented piezoelectric semiconductor or a properly oriented piezoelectric insulator with an adjacent semiconductor and means for launching ultrasonic waves into or on the piezoelectric crystal. When one launches ultrasonic waves from the opposite ends of a piezoelectric crystal so that the two waves travel toward each other, when the two waves meet, a rf signal of large amplitude, at the sum frequency of the ultrasonic waves, will be detected by the semiconductor and the envelope (time function) of the sum-frequency rf

signal represents the convolution integral between the two envelopes of the ultrasonic waves which were launched into the crystal is d-c biased to enhance the signal and in other configurations the semiconductor is not d-c biased.

3,826,933
MOUNTING SYSTEM FOR REAR WHEEL ANGULAR SPEED DETECTORS FOR MOTOR VEHICLES

Giovanni Anselmino, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy

Filed Dec. 13, 1972, Ser. No. 314,641
Claims priority, application Italy, Dec. 14, 1971, 71086/71
Int. Cl. H02k *19/24*
U.S. Cl. 310—168 **2 Claims**

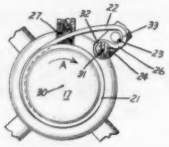


A driven rear wheel of a vehicle is provided with an angular speed detector comprised of a magnetic pick-up and a phonic wheel rotatable relative thereto. The phonic wheel is secured to the outer ring of a roller bearing supported by an annular flange secured to a wheel bearing retaining ring which in turn is secured to the axle housing. The phonic wheel is provided with a plurality of radially inwardly directed teeth which cooperate with the magnetic pick-up which is secured against rotation radially inwardly of the phonic wheel.

3,826,934
NONREVERSIBLE MOTOR

Robert D. Leach, Fort Wayne, Ind., assignor to General Electric Company, Fort Wayne, Ind.

Filed Sept. 25, 1972, Ser. No. 292,176
Int. Cl. H02k *7/10*
U.S. Cl. 310—41 **7 Claims**

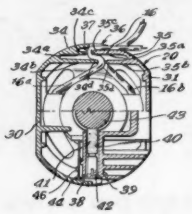


Anti-windmilling arrangement includes an anti-reverse rotation spring mounted on the motor shaft. Spring is helically wound and mounted on shaft within bearing system enclosure to protect it from corrosive agents and is supplied with lubricant. One end of spring is loosely restrained by a stationary structure and other end is in a convolution adjacent the shaft. Spring winds up or closes and grips the shaft if shaft moves in a first direction of rotation. Spring unwinds or uncoils and only loosely contacts shaft during rotation of shaft in opposite direction. Spring contacts shaft while motor is idle but exerts negligible restraint against rotation of shaft in the desired direction. Contact between shaft and spring causes the spring to tighten substantially immediately as the shaft commences to rotate in undesired direction even when lubricant is present at the interface of the shaft and spring.

3,826,935
MOTOR HOUSING CONSTRUCTION FOR A VACUUM CLEANER WITH STRAIN-RELIEF FOR MOTOR LEADS

Keith J. Grierson, Roseville, and Bruce E. Samuelson, St. Paul, both of Minn., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Sept. 12, 1972, Ser. No. 288,378
Int. Cl. H02k *5/14, 5/22;* **H01b** *17/26*
U.S. Cl. 310—71 **11 Claims**

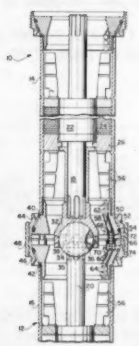


A motor construction for use such as in a vacuum cleaner or a vacuum cleaner attachment, wherein the motor housing is split to define a pair of housing halves which, when secured together, effect an enclosure for the motor, a strain relief for the motor leads, means for mounting the motor brushes, and means for supporting and positioning the armature and field assemblies.

3,826,936
FLEXIBLE SUBMERGIBLE ELECTRIC MOTOR

John C. O'Rourke, Bartlesville, Okla., assignor to TRW, Inc., Cleveland, Ohio

Filed Dec. 6, 1973, Ser. No. 422,165
Int. Cl. H02k *5/12*
U.S. Cl. 310—87 **5 Claims**

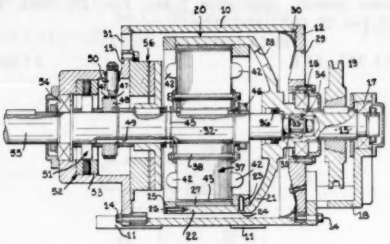


A flexible submergible electric motor is provided which may be used in deviated deep wells. The motor comprises successive rigid sections flexibly interconnected by coupling means which permit relative angular adjustment of the adjacent sections without relative axial rotation.

3,826,937
EDDY CURRENT COUPLINGS

Evan John Davies, 2 Knighton Rd., Sutton Coldfield, England

Filed Aug. 14, 1972, Ser. No. 280,126
Int. Cl. H02k *49/04*
U.S. Cl. 310—105 **11 Claims**

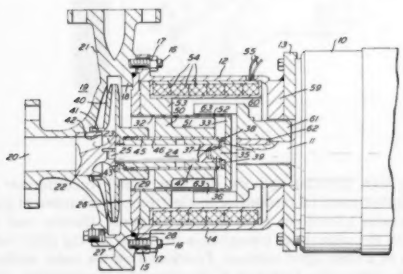


An eddy current coupling comprising coaxial input and output shafts, a pole member connected to one of the shafts and having a series of poles provided with one or more field windings, alternate poles exhibiting the same polarity on excitation of the field winding or windings, and a loss member which comprises a support connected to the other shaft, a loss ring of ferromagnetic material carried by the support so that there is only a small air gap between the poles of the pole member and the loss ring and end rings of non-magnetic material of lower electrical resistivity than that of the material of the loss ring, the end rings being located at the edges of the loss ring in good electrical contact therewith, whereby the loss member provides a path for magnetic flux between the poles of the pole member and also a conductor for the resulting induced voltages which cause eddy currents in the loss member, the reaction between the eddy currents and the flux serving to transmit torque between the members while there is slip between them.

3,826,938
MAGNETIC COUPLING FOR MOTOR DRIVEN PUMPS AND THE LIKE

Burt K. Filer, Philadelphia, Pa., assignor to Process Industries, Incorporated, Huntingdon Valley, Pa.

Continuation-in-part of Ser. No. 262,739, June 14, 1972, abandoned. This application Oct. 23, 1973, Ser. No. 408,721
Int. Cl. H02k *49/06*
U.S. Cl. 310—104 **8 Claims**

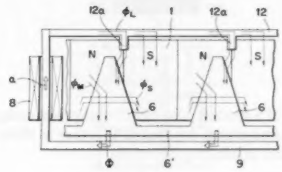


A magnetic drive coupling is disclosed which can be employed in motor driven pumps and for other purposes, which includes coupling members forming part of the magnetic circuit which can be isolated to prevent fluid communication therebetween and in which a plurality of stationary electrically activated flux sources are provided which also form part of the magnetic circuit and in which an improved flux path is provided.

3,826,939
MINIATURE ELECTRIC SYNCHRONOUS MOTOR

Toyoshi Mori, Gifu, and Yoshitaka Iwase, Nagoya, both of Japan, assignors to Kabushiki Kaisha Tokai Rika Denki Seisakusho, Nishibiwajima-cho, Nishikasugai-gun, Aichi Pref., Japan

Filed July 10, 1973, Ser. No. 377,996
Claims priority, application Japan, July 13, 1972, 47-69539; May 8, 1973, 48-50251
Int. Cl. H02k *21/26*
U.S. Cl. 310—154 **8 Claims**

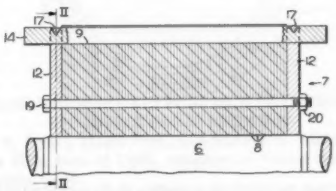


A miniature electric synchronous motor with a rotor formed of pole teeth, characterized by one or more projections formed on a yoke at positions deviated from the center lines of poles of a stator to effectively utilize magnetic flux between said projections and pole teeth for rotation of said pole teeth, thereby to enable the rotor to start wherever the pole teeth rest.

3,826,940
ROTOR CONSTRUCTION FOR SQUIRREL CAGE MOTOR

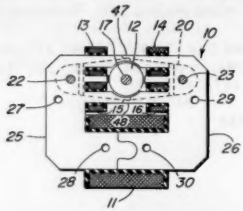
Joseph T. McKean, New Berlin, and Norman M. Steinhauer, Milwaukee, both of Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Mar. 22, 1973, Ser. No. 343,795
Int. Cl. H02k *3/06*
U.S. Cl. 310—211 **6 Claims**



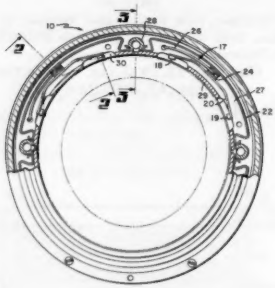
A squirrel cage rotor for an electric motor which includes slotted laminations and a pair of slotted end connectors at each end of the lamination stack. Conductor bars are contained in each of the slots and extend to the ends of the end connectors which also perform the function of end plates. A continuous annular groove is formed in the surface of the end connector and conductor bars and filled with a continuous weld providing a rigid rotor structure and good electrical contact between the conductor bars and the end connectors.

3,826,941
DOVETAILED STATOR STRUCTURE
Reginald J. Folmar, Owen Township, Winnebago County, Ill., assignor to Barber-Colman Company, Rockford, Ill.
Filed Feb. 16, 1973, Ser. No. 332,888
Int. Cl. H02k *1/06*
U.S. Cl. 310—217 7 Claims



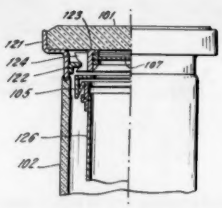
The stator of a shaded pole motor comprises complementary stacks of laminations dovetailed together at their interface to prevent noise producing vibrations.

3,826,942
BRUSH ASSEMBLY FOR A SLIP RING
John J. Twarog, Jr., Bridgeport, Conn., assignor to Avco Corporation, Stratford, Conn.
Filed Oct. 25, 1972, Ser. No. 300,445
Int. Cl. H01r *39/08*; H02k *13/00*
U.S. Cl. 310—232 7 Claims



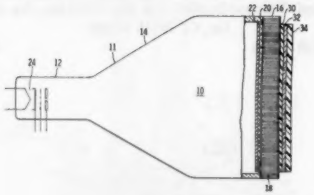
A slip ring, mounted on a rotating shaft, is contacted by four pairs of spring loaded, pressure activated, gas cooled brushes. The brush assembly is supported in one-half of a seal housing, the other half of which provides conventional shaft sealing. The housing for the brush assembly is an annulus having end walls and inner and outer peripheral walls, the inner peripheral wall surrounding the ring and having a plurality of circumferentially spaced openings. The brush assemblies are mounted within the housing and are driven through the apertures into contact with the ring. The brushes are supported from the ends of a leaf spring, the center of which is in turn supported by a support spring which is gas pressure actuated.

3,826,943
CAMERA TUBE OF VIDICON STYLE COMPRISING SINGLE HIGH MELTING-POINT METAL SEAL PROVIDED WITH SUPPORT FOR TARGET
Takuro Kawamura, and Takashi Kawahara, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan
Filed Feb. 27, 1973, Ser. No. 336,335
Claims priority, application Japan, Feb. 29, 1972, 47-20127; Feb. 29, 1972, 47-20128
Int. Cl. H01j *31/26, 29/02*
U.S. Cl. 313—65 R 2 Claims



A camera tube of the type of a vidicon, a scan converter, or the like comprises a single seal member of high melting-point metal having a first portion sealed to the periphery of the face plate, a second portion sealed to the adjacent end of the tubular casing, and a third portion disposed between the face plate and the tubular casing. The third portion is provided with a radially inwardly projecting portion of high melting-point metal. The target electrode is encircled by a ring member provided with a plurality of springs of resilient metal for engaging with the projecting portion to support the target electrode.

3,826,944
CATHODE RAY TUBE WITH INORGANIC PHOSPHOR AND FIBER OPTIC FACE PLATE
Kenneth Cooper, Horseheads, N.Y., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.
Filed June 4, 1970, Ser. No. 43,531
Int. Cl. H01j *29/20, 29/12*
U.S. Cl. 313—92 LF 3 Claims



A high contrast cathode ray tube which incorporates a phosphor material responsive to electronic bombardment and generates ultraviolet radiations in response thereto and in which the ultraviolet phosphor is provided on the inner surface of a fiber optic window. Positioned on the outer surface of the fiber optic faceplate is an ultraviolet transmitting, visible absorbing filter with an organic phosphor emitting visible light in response to ultraviolet excitation and a visible transmitting, ultraviolet absorbing filter provided on the outer surface of the organic phosphor.

3,826,945

ADJUSTABLE MAGNETICALLY FOCUSED TRIODE

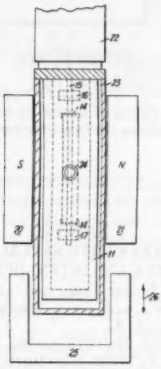
Joshua John Behenna, Galmpton, and Graham Harold George Phipps, Totnes, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 28, 1973, Ser. No. 336,656

Claims priority, application Great Britain, Mar. 2, 1972, 9729/72; 9730/72

Int. Cl. H01j 3/32, 29/76

U.S. Cl. 313—153 5 Claims



The output power of a magnetically focused thermionic electron tube is varied by altering the strength of the magnetic focusing field. In one embodiment, the output power of an oscillator using a magnetically focused triode may be reduced over a wide range by reducing the focusing field without any detrimental increase of intercepted beam current. The field is reduced by use of a magnetic shunt across the pole pieces of a permanent magnet used for focusing, the shunt being moved mechanically toward or away from the pole pieces. The device may also be used to control gate current in a gate controlled tube.

3,826,946

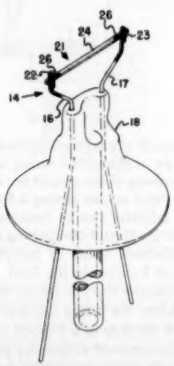
VAPOR DISCHARGE LAMP ELECTRODE HAVING CARBON-COATED AREAS

Edward E. Hammer, Mayfield Village, and John Paynter, Painesville, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed May 24, 1973, Ser. No. 363,571

Int. Cl. H01j 61/06

U.S. Cl. 313—218 7 Claims



A carbon coating is provided on the filament end regions, and also on the adjacent support wires and anodes, of an electrode structure for a low pressure mercury vapor discharge lamp, such as a fluorescent lamp. This results in improved lamp efficiency and reduced oxide ring formation at the lamp ends.

3,826,947

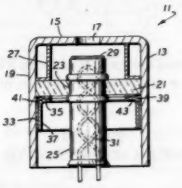
CATHODE POSITIONING RETAINER

Robert J. Bowes, and John J. Miller, both of Seneca Falls, N.Y., assignors to GTE Sylvania Incorporated, Seneca Falls, N.Y.

Filed June 29, 1973, Ser. No. 375,181

Int. Cl. H01j 29/48, 1/94

U.S. Cl. 313—268 8 Claims



This relates to improved cathode retainer means for effecting positive positioning of a cathode within a companion electrode structure for use in a cathode ray tube electron gun. An end-emitting cathode is affixed within the aperture of a ceramic insulator disc and thence suitably positioned within a control grid electrode by an improved retainer means fabricated to exert sustained pressure against the supporting insulator. The improved retainer has a plurality of terminally oriented instanding projections of a bilaminate metallic material of predetermined flexure performance which are oriented to abut the insulator. Such bilaminate material comprises a first lamina of an active metallic alloy contiguously bonded along a common interface to a second lamina of a passive alloy material. The active alloy portion upon being subjected to a predetermined temperature during tube processing undergoes a metallurgic phase transformation effecting a volume change therein producing a definite modification of the shaping of the retainer projections thereby exerting positive and sustained pressure against the cathode positioning insulator.

3,826,948

COAXIAL POWER GRID TUBE HAVING IMPROVED INTERNAL LEAD STRUCTURES

James P. Polese, Menlo Park, and Sterling G. McNees, Los Altos Hills, both of Calif., assignors to Varian Associates, Palo Alto, Calif.

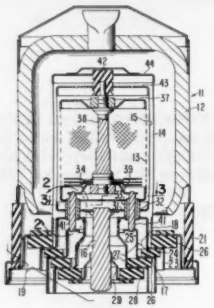
Filed May 4, 1973, Ser. No. 357,303

Int. Cl. H01j 1/46, 21/10

U.S. Cl. 313—293 10 Claims

In a coaxial power grid tube, the control grid lead passes into the envelope of the tube coaxially of and within the cathode lead structure. A cross-over structure is provided within the envelope for passing the control grid structure through the cathode lead structure in insulative relation thereto. The cathode lead structure includes a pair of concentric radially spaced cylinders (double wall) connected together for applying potential to one end of a directly heated thermionic cathode emitter, whereas the other lead for the

cathode emitter is disposed in insulative relation within the interior of the double wall cathode lead structure for completely shielding the internal cathode lead from RF energy present in either the grid drive or output RF circuits of the tube.

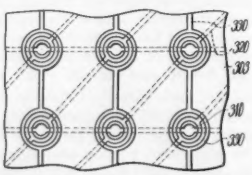


3,826,949

DISPLAY DEVICE AND METHOD OF MAKING THE SAME

Toshifumi Nakamura; Akio Ohgoshi, and Shoicho Muramoto, all of Tokyo, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed June 27, 1972, Ser. No. 266,629
Claims priority, application Japan, July 1, 1971, 46-48220
Int. Cl. H01j *1/02;* **H05b** *41/00*
U.S. Cl. 315—169 R **3 Claims**



A method of making a display device having steps of forming a first electrode array including a plurality of electrodes, forming an insulating layer on the first electrode array, forming a second electrode array including a plurality of electrodes so as to cross the first electrode array, and forming apertures corresponding to cross-points of the plurality of electrodes of the first and second electrode arrays to be filled with an ionizable gas therein. A display device having selecting electrode plates in addition to the first and second electrode arrays and apertures formed therethrough.

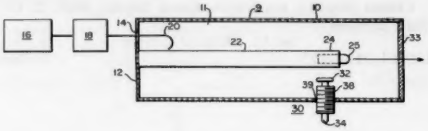
3,826,950

ELECTRODELESS LAMP IGNITER SYSTEM

Robert M. Hruda, and Howard E. De Haven, both of Horseheads, N.Y., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 16, 1973, Ser. No. 324,055
Int. Cl. H05h *41/24*
U.S. Cl. 315—267 **5 Claims**

An electrodeless lamp resonant cavity apparatus for use as a spectral source in atomic absorption spectroscopy. The apparatus utilizes a cavity resonator to excite the lamp. A tuning means is utilized to ignite the lamp by momentarily sweeping the tuning of the cavity with the unexcited lamp through the most favorable condition for ignition. Upon release the tuning means returns the tuning of the cavity to that condition most favorable to maintaining the lamp discharge.

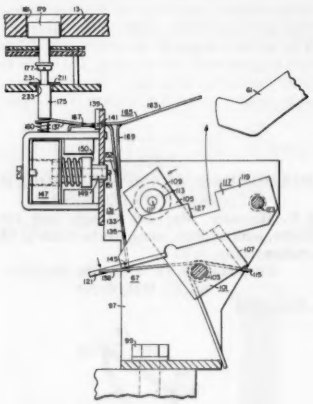


3,826,951

CIRCUIT BREAKER WITH REPLACEABLE RATING ADJUSTER AND INTERLOCK MEANS

Alfred E. Mater, Beaver Falls, and Alan B. Shimp, Monroeville, both of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Jan. 30, 1973, Ser. No. 327,972
Int. Cl. H02h *3/08;* **H01h** *73/00*
U.S. Cl. 317—33 SC **8 Claims**



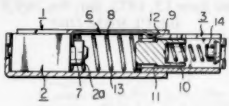
An improved circuit breaker comprises an externally accessible plug-in type replaceable rating adjuster removably supported on the housing of the circuit breaker. The rating adjuster comprises resistor means having a first resistance value. The plug-in rating adjuster can be removed and replaced by another plug-in rating adjuster comprising resistor means having a different resistance value to thereby enable a rating change of the circuit breaker in the field. Interlock means is provided to automatically trip the circuit breaker if the circuit breaker is closed when the rating adjuster is removed and to maintain the circuit breaker in a tripped condition so long as the rating adjuster is removed to thereby prevent operation of the circuit interrupter while the rating adjuster is removed. Keying means prevents the mounting of an improper rating adjuster on the breaker.

3,826,952

HIGH VOLTAGE GENERATING DEVICE

Shingi Iwasaki, and Kiyoshi Obata, both of Tokyo, Japan, assignors to Rion Co., Ltd., Tokyo, Japan

Filed Apr. 27, 1973, Ser. No. 355,156
Claims priority, application Japan, Sept. 14, 1972, 47-107259
Int. Cl. F23q 3/01
U.S. Cl. 317—81 10 Claims



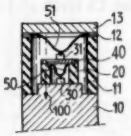
A high voltage generating device formed of an elongated case, or housing, having a piezoelectric element seated at one end and having a hollow slide telescoped into the other end. A striker is telescoped into the slide and biased into an extended position by a power coil spring. A blocking member is secured to the housing formed of a latch and an adjacent cam surface. Thus when the slide is pressed inwardly the striker is blocked by the latch storing up energy in the power spring until a point is reached where the cam surface is triggered by the slide thereby to release the striker to strike the piezoelectric element. A return spring restores the slide to its initial position. In the preferred embodiment the blocking member is of L shape having a base which is sandwiched between the return spring and the piezoelectric element and having an arm which registers with a longitudinal slot formed in the housing. Assembly is facilitated by providing ears on the slide for holding the striker captive and ears on the housing for holding the slide captive therein.

3,826,953

CASE FOR A PLURALITY OF SEMICONDUCTOR DEVICES

Maurice Le Gales, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Jan. 16, 1973, Ser. No. 324,144
Claims priority, application France, Jan. 21, 1972, 72.2049
Int. Cl. H05k 5/00
U.S. Cl. 317—100 4 Claims



A novel case is capable to receive a plurality of semiconductor devices.

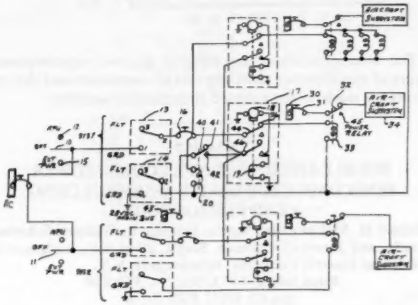
A case comprises a metallic base and a metallic cover separated one from another by means of a hollow insulating body constituting a receptacle. Said enclosure further comprises an intermediary support located inside said receptacle and carrying itself a certain number of devices which are added to those which are normally soldered to the base of the case.

3,826,954

GROUND AUTOMATIC DISCONNECT SYSTEM

James A. Neher, 4640 151 Ct. S.E., Bellevue, Wash. 98006

Filed July 13, 1973, Ser. No. 379,025
Int. Cl. H01h 63/36
U.S. Cl. 317—135 2 Claims



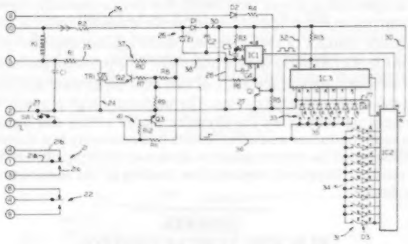
An automatic power disconnect apparatus for denying ground auxiliary power electrical supplies from needlessly energizing power circuits of an aircraft during the period when an aircraft is on the ground.

3,826,955

TIME DELAY RELAY

Otto Fest, 2007 Avon Ln., Arlington Heights, Ill. 60004

Filed Feb. 9, 1973, Ser. No. 331,241
Int. Cl. H01h 47/18
U.S. Cl. 317—141 S 11 Claims



A time delay relay that is digitably programmable for set periods of time with great accuracy. Further, interconnections of the leads extending from a time delay relay base causes the time delay relay to operate as a flip-flop device, or as a pulse source in addition to its time delay function.

3,826,956

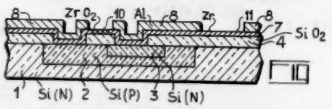
INTERCONNECTION FOR INTEGRATED UHF ARRANGEMENTS

Michel Croset, Paris, France, assignor to Sescosem-Societe Europeenne de Semiconducteurs et de Microelectronique, Paris, France

Filed May 31, 1972, Ser. No. 258,441
Claims priority, application France, June 9, 1971, 71.20940
Int. Cl. H01l 5/00
U.S. Cl. 317—234 R 5 Claims

An interconnection system circuit integrated on the same substrate comprises: ohmic contacts made by a layer of zir-

conium or tantalum which ensures resistive contact and overlaid with a layer of aluminum.



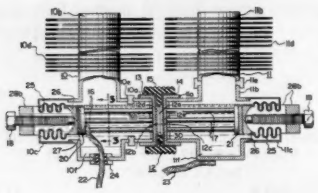
The interconnections are effected by two superimposed layers of zirconium or tantalum and of aluminium and the resistors are made by the exposed zirconium or tantalum.

3,826,957

DOUBLE-SIDED HEAT-PIPE COOLED POWER SEMICONDUCTOR DEVICE ASSEMBLY USING COMPRESSION RODS

Michael H. McLaughlin, Scotia; Gunnar E. Walmet, Schenectady, and James C. Corman, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed July 2, 1973, Ser. No. 375,810
Int. Cl. H01l *3/00, 5/00*
U.S. Cl. 317—234 R **33 Claims**



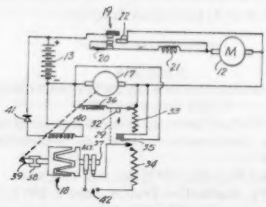
Two groups of rods disposed perpendicular to opposite ends of a replaceable power semiconductor device assembly have a compressive force applied thereto for causing uniform high pressure contact of two pressure plates against opposite ends of the semiconductor device assembly. The pressure plates are the evaporating surface ends of two heat pipes used for cooling the semiconductor device. The uniformly high pressure interfaces developed by the pressure plates within and against the semiconductor assembly results in a relatively low thermal resistance of the semiconductor device-to-heat pipe interfaces to produce improved vaporization cooling of the semiconductor device.

3,826,958

ELECTRIC VEHICLE CONTROL

John Cvetnic, P.O. Box 34, Pewamo, Mich. 48873

Filed Aug. 23, 1972, Ser. No. 282,947
Int. Cl. H02p *5/06*
U.S. Cl. 318—113 **1 Claim**



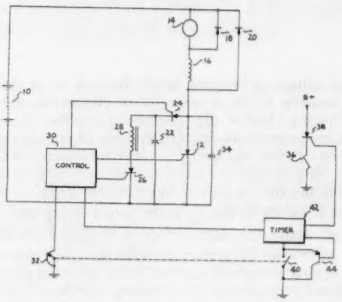
An electric vehicle control which utilizes the counter EMF DC motor with a spinning armature serving as a control of power between the DC source and the car motor. A smooth infinite variation from zero to full power is provided simply by varying the speed of the armature by any means such as a mechanical magnetic or hydraulic brake or an alternator which is useful in returning most of the power back to the battery.

3,826,959

BYPASS CONTACTOR CIRCUIT

Albert W. Anderson, Roanoke, Va., assignor to General Electric Company, Salem, Va.

Filed June 13, 1973, Ser. No. 369,510
Int. Cl. H02p *1/00*
U.S. Cl. 318—139 **8 Claims**



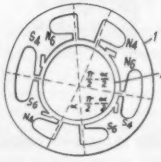
Means for preventing drive train slap in an electric vehicle during the closure of a thyristor bypass contactor. Upon closure of a manually-operated switch, a timer is energized. If the switch remains closed for a predetermined period means are energized to prevent commutation of a thyristor providing current to the vehicle motor, and current is supplied to a relay winding for closing the contacts bypassing the thyristor. Overriding means are provided to ensure energization of the relay coil in the event that the manually-operated switch is opened before the coil is fully energized.

3,826,960

ELECTRIC MOTORS

Alexander Richard William Broadway; William Fong, both of Westbury-on-Trym, and Gordon Hindle Rawcliffe, Bristol, all of England, assignors to National Research Development Corporation, London, England

Filed Feb. 22, 1972, Ser. No. 228,137
Claims priority, application Great Britain, Mar. 26, 1971, 7920/71
Int. Cl. H02k *17/10*
U.S. Cl. 318—223 **6 Claims**



A single-phase alternating current, two-speed, shaded-pole induction motor having a squirrel cage rotor and having a stator winding switched to provide alternative pole-numbers by pole-amplitude modulation. The stator winding has a number of coils corresponding to the lower pole-number. The coil

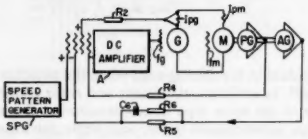
pitch and coil spacing represent a compromise between the lower and higher pole-numbers. The stator may be either of the salient pole or slotted type.

3,826,961

DEVICE FOR CONTROLLING SPEED OF DC MOTOR

Shunichiro Hayase; Seiya Shima; Takeki Ando, all of Katsuta; Hiroaki Kuroha, Mito, and Toshiaki Kurosawa, Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sept. 28, 1972, Ser. No. 293,095
Int. Cl. H02p *5/16*
U.S. Cl. 318—308 **6 Claims**



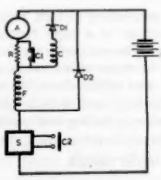
In a speed control system comprising a combination of a dc generator and a dc motor in the Ward-Leonard connection, a tacho-generator connected with the dc motor, a speed pattern generator, and an amplifier for amplifying the deviation of the output of the tacho-generator from the output of the speed pattern generator, the output of the amplifier excites the field winding of the dc generator, the current of the dc motor is detected and positively fed back to the amplifier, and the differential values of the output of the tacho-generator and of the motor current are negatively fed back to the amplifier, respectively.

3,826,962

CONTROL OF ELECTRIC MOTORS FOR BATTERY-OPERATED VEHICLES

John Morton, Hazel Grove; Keith Drummond Stevens, Marple, and Graham Spencer Thexton, Marple Bridge, all of England, assignors to Cableform Limited, Cheshire, England

Filed May 30, 1973, Ser. No. 365,149
Claims priority, application Great Britain, June 8, 1972, 26669/72
Int. Cl. H02p *3/12*
U.S. Cl. 318—376 **5 Claims**



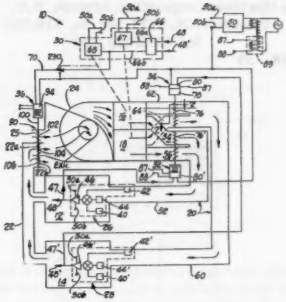
A control means for a series electric motor for, for example, battery operated vehicle usually includes a DC switch for connecting said motor across a battery, a flywheel diode for connecting across the motor and a reverse diode for conducting armature current resulting from regeneration. To avoid overheating when regeneration braking is used on long gradients a resistor is provided in the armature reverse-diode loop in combination with a contactor having a current coil sensitive only to reverse diode current and having normally closed contacts shorting the resistor.

3,826,963

DAMPER ACTUATOR CONTROLS FOR AIR CONDITIONING SYSTEMS

Jerome L. Lorenz, Columbus, Ohio, assignor to Ranco Incorporated, Columbus, Ohio

Filed May 30, 1972, Ser. No. 257,744
Int. Cl. H02p *1/54*
U.S. Cl. 318—471 **8 Claims**



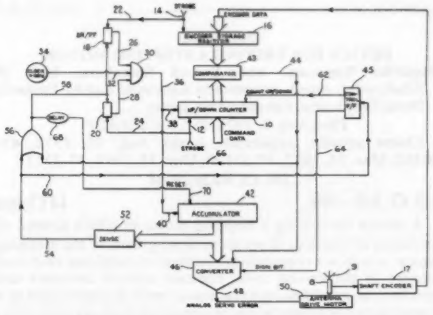
A multiple zone air conditioning system is disclosed which employs zone temperature sensing units for producing analog electric signals related to sensed temperatures. Dampers are associated with ducting leading to each zone to regulate the proportions of heated and/or cooled air supplied to the respective zones in response to the sensing unit signal from the respective zone. A damper unit is also provided for regulating the proportions of ventilation and return air circulating within the system as a function of the temperature of the warmest zone. The actuator for each damper is associated with a respective control for governing the position of the damper in response to the zone sensing unit signals.

3,826,964

DIGITAL SERVO CONTROLLER

Frank Byrne, Cocoa Beach, Fla., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed June 28, 1973, Ser. No. 374,583
Int. Cl. G05b *19/28*
U.S. Cl. 318—602 **5 Claims**



A system for generating a signal for controlling the rotation of a shaft supporting an antenna so that the antenna is rotated the shortest angular distance from a present angular position to a new desired angular position. The system comprises a shaft encoder means which generates a digital encoder signal

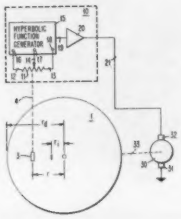
indicating the present position of the shaft. A command signal is compared with the encoder signal to produce an analog signal for rotating the antenna. An error signal is produced for controlling the direction of rotation of the antenna.

3,826,965

CONSTANT TANGENTIAL VELOCITY MOTOR CONTROL FOR A DISC RECORDING SYSTEM

Charles Ronald Bringol, Austin, Tex., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 29, 1972, Ser. No. 310,502
Int. Cl. H02p *7/68*
U.S. Cl. 318—39 **6 Claims**



A disc recording system includes a motor control system for energizing a DC motor utilized as the prime mover of a recording disc. A transducer attached to a carrier, movable along a radius of the disc, is utilized for reading data from the disc or recording data onto the disc. A linear potentiometer is fixedly mounted along a radius of the disc and includes a movable wiper connected for movement with the transducer carrier. The potentiometer is connected in the feedback loop of a high gain amplifier function generator which produces an output voltage that is hyperbolic with respect to the position of the wiper along the length of the linear potentiometer. This hyperbolic output voltage is applied to a DC motor for providing substantially constant tangential velocity of the portion of the disc adjacent to the transducer. In applications wherein the transducer mechanically contacts the disc, increased torque opposes motor rotation as the transducer is moved farther away from the center of the disc. In these applications, a compensating motor driver is inserted between the hyperbolic function generator and the motor to provide an increase in electrical energy supplied to the motor in response to increased torque in opposition to motor rotation.

3,826,966

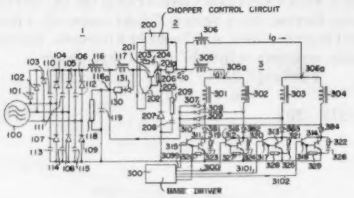
DEVICE FOR DRIVING A STEPPING MOTOR

Nagahiko Nagasaka, and Katsuji Shinohara, both of Kitakyushu, Japan, assignors to Kabushiki Kaisha Yaskawa Denki Seisakusho, Fukuoka-ken, Japan

Filed Aug. 6, 1973, Ser. No. 385,629
Claims priority, application Japan, Aug. 10, 1972, 47-80582; Mar. 16, 1972, 47-31120; Mar. 22, 1972, 47-33711
Int. Cl. H02k *29/04*
U.S. Cl. 318—696 **14 Claims**

A device for driving a stepping motor in which instead of provision of resistors in series to driving coils of the stepping motor, which is a conventional method of supplying electrical current to the driving coils, constant current choppers and reactors are provided, and reactive current is regenerated to a power source through diodes or circulated to the driving coils.

A device for driving a stepping motor comprising: a d.c. power source; constant current choppers for supplying constant current to the driving coils of the stepping motor, or a load, from the power source the driving coils being classified into three or four groups corresponding to three or four phases; reactors or, if necessary, the d.c. field coils of the stepping motor; four transistor switches or a three-phase bridge inverter for regulating the flow of current to the driving coils; a flywheel diode or two diodes cross-connected for the circulation of energy residual in the load when the choppers are off; and a circuit for regenerating to the power source



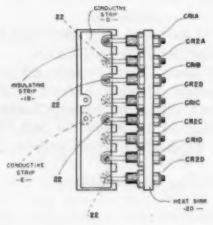
energy residual in the driving coils when the switches or the inverter is off. In addition, the stator and rotor of the stepping motor are of the same type in construction as those of an inductor type synchronous rotor, and while driving coils corresponding to two phases being energized, all the driving coils are energized one phase by one phase.

3,826,967

LOW LEAKAGE SECONDARY CIRCUIT FOR A POWER TRANSFORMER INCLUDING CONDUCTIVE STRIPS FORMING THE SECONDARY AND CONNECTIONS FOR RECTIFYING DIODES

Bruce L. Wilkinson, Torrance, and Michael C. Stolowitz, Sherman Oaks, both of Calif., assignors to Pioneer Magnetics, Inc., Santa Monica, Calif.

Filed May 29, 1973, Ser. No. 364,831
Int. Cl. H02m *7/00*
U.S. Cl. 321—8 R **5 Claims**



A low leakage, secondary circuit, structure is provided for the power transformer in a high frequency power inverter system, or the like. The secondary circuit includes mutually insulated conductive strips which are placed in close proximity to one another, and which form the secondary winding of the power transformer, and which also form connections between the secondary winding and rectifying diodes included in the secondary circuit is minimized, thereby to minimize the leakage reactance in the circuit.

3,826,968

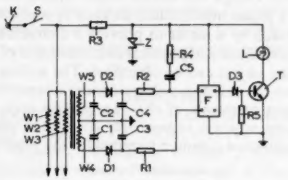
ARRANGEMENT FOR SUPERVISING AN ELECTRIC CIRCUIT

Robertus Gerardus Visser, Amsterdam, Netherlands, assignor to Johan W. Visser, Amstelveen, Sprotlaan and Frans Verlinden, Breukeleveen, Herenweg, Netherlands

Filed Sept. 19, 1973, Ser. No. 398,799
Int. Cl. G08b *21/00;* **H02h** *3/18*
U.S. Cl. 322—99 **5 Claims**

Arrangement for supervising an electric circuit in a vehicle wherein a primary winding inserted in the circuit to be super-

vised is coupled with a secondary winding having a grounded centre tap. The ends of the secondary winding are each connected through a diode with an associated smoothing condenser. The voltages occurring across the smoothing condensers are each supplied to one of the inputs of a bistable trigger. The trigger is set when the circuit is switched on. If the circuit



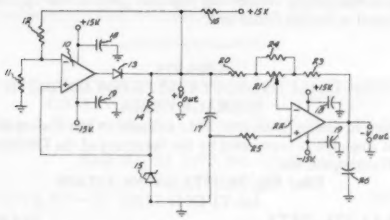
is intact, the trigger is reset by the transient occuring in the primary winding. If there is an interruption in the circuit, the trigger is left in its set condition. The trigger is returned to its set condition if an interruption occurs during the use of the circuit. Thus, the condition of the trigger indicated whether the circuit is operative.

3,826,969

HIGHLY STABLE PRECISION VOLTAGE SOURCE

Charles W. Eichelberger, Schenectady, and Philip M. Garratt, Amsterdam, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 2, 1973, Ser. No. 347,239
Int. Cl. G05f *1/58*
U.S. Cl. 323—19 **16 Claims**



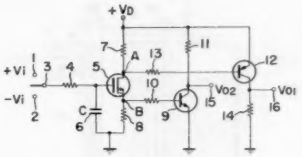
A single polarity voltage source includes a single operational amplifier having its output connected through a serially connected first diode and resistor to the non-inverting input of the amplifier. The juncture of the resistor and amplifier input is connected through a zener diode to ground. The source output voltage of positive polarity is developed across the serially connected resistor and zener diode. This output voltage is highly stable and is used as the supply voltage for the zener diode to thereby provide an extremely stable current supply to the zener diode. A ratio of the resistances of high stability resistors in the inverting input and feedback circuits of the amplifier determines the amplifier gain and thus the magnitude of the output voltage relative to the zener diode voltage. A negative polarity output voltage is developed across the output of a second operational amplifier functioning as an inverter and having its inverting input connected through a potentiometer to the juncture of the serially connected first diode and resistor. The potentiometer is adjusted to match the value of the negative polarity output voltage to the positive polarity output.

3,826,970

DEVICE FOR USE IN VARYING OUTPUT VOLTAGE

Shunzo Oka; Shunji Minami, and Takehide Takemura, all of Osaka, Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka-fu, Japan

Filed Aug. 24, 1973, Ser. No. 391,068
Claims priority, application Japan, Aug. 29, 1972, 47-86823
Int. Cl. G05f *3/08*
U.S. Cl. 323—19 **2 Claims**



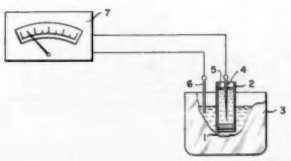
A condenser is connected between the ground and the gate of a MOS type field effect transistor, while the base of an NPN transistor is connected to the source of the FET. The base of a PNP transistor is connected to the drain of the FET. When the condenser is charged and thus the gate potential of the FET is increased, then the potential at a first output terminal connected to the collector of the PNP transistor will be increased, while the potential at a second output terminal connected to the NPN transistor will be lowered. When the gate potential of the FET is lowered, then the potential at the first and second output terminals will be varied in the reverse fashion to that described earlier. Accordingly, the gradual variation in the charged level of the condenser may provide a gradual variation in the voltage across both of the output terminals.

3,826,971

DETERMINATION OF SULFATE USING FERRIC ION-SELECTIVE ELECTRODE

Raymond J. Jasinski, and Isaac Trachtenberg, both of Dallas, Tex., assignors to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Apr. 12, 1973, Ser. No. 350,444
Int. Cl. G01n *27/46*
U.S. Cl. 204—1 T **5 Claims**

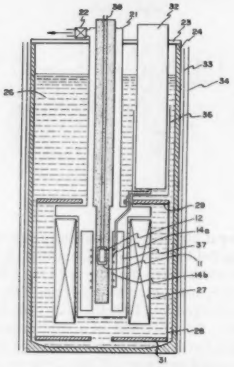


Sulfate ion concentration in aqueous solution is determined by initially adding a known concentration of ferric ion to the solution, and adjusting the pH of the solution to a suitable value, whereby ferric ion is complexed by the sulfate ion. The activity of the remaining, uncomplexed ferric ion is then measured by means of a ferric ion-selective electrode comprising a glass of the formula $Fe_nGe_xSb_ySe_z$, where n is about 1.5 to 3.0, x is about 27 to 29, y is about 11 to 13 and z is about 59 to 61.

3,826,972
METHOD AND APPARATUS FOR DETECTING NUCLEAR MAGNETIC RESONANCE

Edmund P. Day, Palo Alto; William M. Fairbank, Menlo Park, and James E. Opfer, Palo Alto, all of Calif., assignors to The Board of Trustees of Leland Stanford Junior University, Stanford, Calif.

Filed Aug. 17, 1973, Ser. No. 389,320
Int. Cl. G01n *27/78*
U.S. Cl. 324—0.5 R **13 Claims**

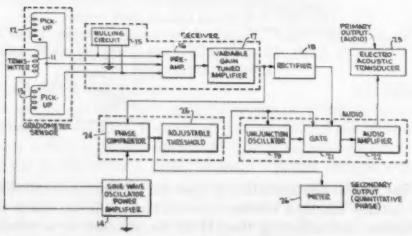


Apparatus for detecting nuclear magnetic resonance in which the sample is subjected to a high magnetic field in one direction to polarize the nuclear spins, then an alternating radio frequency magnetic field is applied to the sample and varied from a frequency below the resonant frequency of interest of the sample to a frequency above the resonant frequency, or vice versa, at a rate which provides adiabatic fast passage. A detector detects the change in the magnetization parallel to the direction of the magnetic field during said adiabatic fast passage. The method of detecting nuclear magnetic resonance which comprises polarizing the sample, changing the steady state value of the longitudinal magnetization and detecting the change in the steady state value of the longitudinal magnetization.

3,826,973
ELECTROMAGNETIC GRADIOMETER

Norman C. Pflaum, Miami, Fla., assignor to Richard Benson, Miami, Fla., a part interest

Filed Jan. 10, 1973, Ser. No. 322,400
Int. Cl. G01v *3/10*; G01r *33/02*
U.S. Cl. 324—3 **15 Claims**

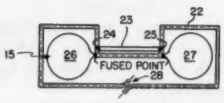


An electromagnetic gradiometer includes a pair of coaxial pickup coils arranged on opposite sides of a transmitter coil for deriving a magnetic field in response to a fixed frequency a.c. source. The pickup coils are connected to null circuitry which derives a substantially zero a.c. voltage in response to neither a ferrous nor a conductive body being in the field. In response to ferrous and conducting bodies being in the field, non-zero a.c. voltages having phases displaced relative to each other are produced. Detection circuitry responds to the amplitude and phase of the voltage derived from the pickup coils to generate aural outputs at two different frequencies which enable the ferrous and conductive bodies to be easily distinguished even though the device scans rapidly over an area. Quantitative phase information, derived by a phase comparator, is provided by a meter to provide a characteristic signature of the electrical and physical characteristics of a detected object, so the object can be identified. The nulling circuit includes a two-tap resistive voltage divider connected in shunt across output terminals of the two pickup coils. First and second of the taps are respectively connected via a resistor and a capacitor to a common terminal for the windings.

3,826,974
GAS TESTING APPARATUS OF THE MAGNETIC SUSCEPTIBILITY TYPE UTILIZING A GLASS COATED FILAMENT SUPPORT FUSED TO THE TEST BODY

Riad M. A. Kocache, Tunbridge Wells, and Danny F. Holman, Crowborough, both of England, assignors to Sybron Corporation, Rochester, N.Y.

Filed Jan. 15, 1973, Ser. No. 323,952
Int. Cl. G01r *33/12*
U.S. Cl. 324—36 **6 Claims**

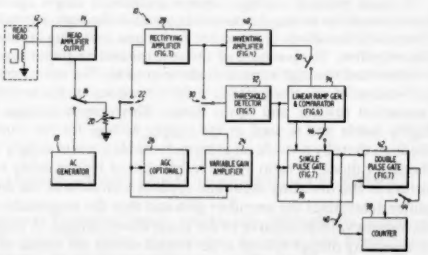


Glass is used in the construction of gas testing apparatus of the magnetic susceptibility type for both protectively coating and mechanically connecting together parts of the apparatus exposed to the gas under test.

3,826,975
UNIVERSAL DROPOUT TESTER FOR MAGNETIC STORAGE MEDIA

Sidney B. Geller, Rockville, Md., assignor to The United States of America as represeted by the Secretary of the Commerce, Washington, D.C.

Filed Aug. 29, 1973, Ser. No. 392,608
Int. Cl. G01r *33/00*
U.S. Cl. 324—34 TA **16 Claims**



A method and apparatus are disclosed for testing the dropout response of a magnetic recording medium by detecting and counting dropouts present on the recorded magnetic recording medium. A pulse (which may be on any one of a

number of fundamental frequencies) is recorded on the magnetic storage medium. When the level of the reproduced tone is below a given amplitude level, a timing apparatus consisting of a linear ramp generator and comparator is activated. The comparator produces an output pulse each time the level of the signal produced by the linear ramp generator falls below a given amplitude level. The production of each output pulse reflects that the dropout has persisted for a reference time unit. The number of pulses produced during any given dropout is a measure of the duration of the entire dropout in reference time units. The total number of pulses produced by the comparator is stored in a counter, the count reflecting the dropout performance of the magnetic storage media.

3,826,976

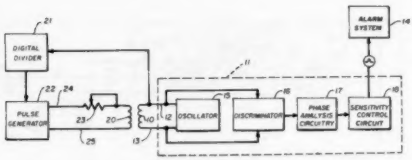
CALIBRATION APPARATUS AND METHOD FOR AN EDDY CURRENT PHASE SENSITIVE SELECTOR

James F. Winston, Pittsburgh; William J. Greer, Glenshaw, and Malcolm S. Steele, Pittsburgh, all of Pa., assignors to Jones & Laughlin Steel Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 110,459, Jan. 28, 1971, abandoned. This application Dec. 7, 1972, Ser. No. 313,069

Int. Cl. G01r *33/12*

U.S. Cl. 324—40 **2 Claims**



Electromagnetic inspection apparatus, such as a phase sensitive eddy current inspection device, is calibrated by providing voltage pulses of selected amplitude to a calibration coil or solenoid located in fixed proximity to the inspection apparatus test coil or solenoid, creating defect-simulating magnetic disturbances which are sensed by the test coil.

3,826,977

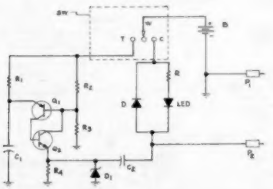
TEST SET FOR TRACING AND CHECKING THE CONTINUITY OF ELECTRICAL CIRCUITS

Chris C. Woodworth, 600 S. Dobson Rd., Suite 45, Mesa, Ariz. 85202

Filed May 24, 1973, Ser. No. 363,426

Int. Cl. G01r *31/08*

U.S. Cl. 324—51 **5 Claims**



Apparatus is disclosed for locating and tracing an electrical path through electrical conductors. A signal generator producing a multi-harmonic signal is connected to an electrical conductor under test. The signal includes amplitude modulated harmonics in the AM broadcast band whereby standard AM radio receivers can be used to detect the conductor transmitting the signal. Selectively energized additional circuitry provides a visual indication of a continuity check performed on the electrical conductor.

3,826,978

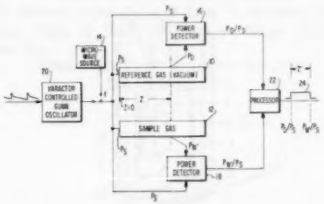
WAVEGUIDE REFRACTOMETER

Arnold J. Kelly, Princeton Junction, N.J., assignor to Dynalysis of Princeton, Princeton, N.J.

Filed Apr. 3, 1973, Ser. No. 347,525

Int. Cl. G01r *27/04*

U.S. Cl. 324—58.5 A **15 Claims**



A waveguide driven near its cut-off frequency is used to measure the refractivity of a gas flowing through the waveguide. The lateral dimensions of the waveguide are on the order of a wavelength of the driving signal. In one embodiment, an oscillator drives a reference waveguide containing a vacuum or gas of known refractivity while the same oscillator drives an identical parallel waveguide through which flows a gas of unknown refractivity. The normalized propagated power levels at the same point along the lengths of the two waveguides are measured in order to determine the unknown refractivity. In a preferred variation, the driving frequency is linearly swept from above the cut-off frequency of the evacuated waveguide, and the difference in the frequencies at which the propagated power levels at the measuring point reach a predetermined level in each of the waveguides is used as a measure of the unknown refractivity. The difference in times at which these power levels are reached can also be used as a measure of the unknown refractivity. In other embodiments, the same principle of operation of a waveguide near cut-off frequency is utilized in single and multiple waveguide assemblies to measure the unknown refractivity.

3,826,979

CAPACITIVE DETECTOR DEVICE

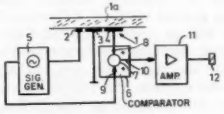
Helmut Steinmann, Baden-Baden, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed June 18, 1973, Ser. No. 370,963

Claims priority, application Germany, Aug. 10, 1972, 2239359

Int. Cl. G01r *27/26*

U.S. Cl. 324—61 R **8 Claims**



A stray field capacitor with three plates edge to edge in a row has its center plate grounded, and normally most of the stray field of a signal applied to one of the end plates is between that end plate and the center plate which shields the other end plate. A reverse phase signal of proper amplitude may be used to reduce to zero the quiescent output of a receiver attached to the other end plate of the capacitor. If the capacitor plates are mounted on the inside of the windshield of a motor vehicle, the receiver will switch on the windshield wipers when moisture collects on the windshield.

3,826,980

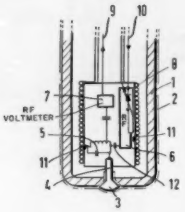
ENAMELED ELECTRICAL SENSING PROBE

Hermann Deichelmann, and Herrmann Veit, both of Schwetzingen, Germany, assignors to Pfaudler-Werke AG, Schwetzingen, Germany

Continuation of Ser. No. 693,928, Dec. 27, 1967, abandoned. This application Dec. 4, 1969, Ser. No. 882,292

Int. Cl. G01r *27/26*

U.S. Cl. 324—61 P **6 Claims**



A transducer assembly, to measure dielectric and similar electrical properties of materials is constructed in the form of a tubular electrode of enameled steel, closed off at the bottom with a second, button electrode set into the bottom closure, insulated from the tubular electrode by the enamel, and further covered by a unitary enamel layer to resist high temperature, corrosion and the like; and electronic measuring components including an RF generator circuit, tuned circuits and the like coupled to the electrodes and located within the tubular electrode.

3,826,981

SOLID-STATE HIGH IMPEDANCE METER SYSTEM

Hugh C. Ross, 11915 Shadybrook Ct., Saratoga, Calif. 95070

Division of Ser. No. 726,452, May 3, 1968. This application Nov. 13, 1972, Ser. No. 305,721

Int. Cl. G01r *31/02, 1/06*

U.S. Cl. 324—72.5 **4 Claims**

Presented is a system, including apparatus and methods of operation thereof, for effecting isolated measurement and sensing of line to ground voltages, differential voltages, currents, insulation leakage and resistances, Corona levels, and other parameters in insulated conductors and related systems associated with low and high power, low and high voltage electrical and electronic systems. The system includes a high input impedance meter unit actuated by a solid-state amplifier circuit including a pair of feedback circuits that cooperate with transistor amplifiers to maintain substantially constant the ratio of input and output from the circuit over a wide range of AC and DC voltages and currents. In its different applications, the high input impedance meter including solid-state amplifier circuit is used in conjunction with a variety of probes, both low voltage and high voltage types, for measurements of various voltages, and may be utilized with a proximity probe for direct sensing of AC fields. The high input impedance of the meter movement and solid-state circuit also permits the use of Corona voltage level and detecting probes for both high voltage direct and low voltage indirect or proximity measurement of various levels of voltages. Inasmuch as it is important that systems of this type be predictably accurate and operative, the system also includes a high voltage portable test unit to test the voltmeter and probes. To insure complete reliability of values being measured, the high voltage portable test source itself is subject to test to determine that it is operating properly before it is used to test the voltmeter and probes, and for this purpose a high voltage megohmmeter insulation leakage current-emission detecter is provided to test the high voltage portable test voltage source, and to measure the high voltage insulation associated with the high voltage point or terminal being measured. Inasmuch as the high input impedance metering system is used in conjunction with high voltages, a collapsible and detachable insulating "hot stick" is provided to isolate the high voltage components from human contact while in use.

3,826,982

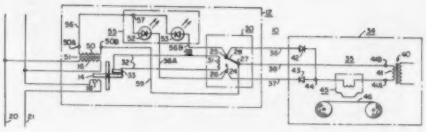
INDICATOR CIRCUIT FOR MONITORING PULSES INITIATED IN A REMOTE METER READING SYSTEM

Theodore M. McClelland, Cary, N.C., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 2, 1973, Ser. No. 356,668

Int. Cl. G01r *13/04*

U.S. Cl. 324—113 **3 Claims**



An indicator circuit for monitoring pulses initiated in a remote meter reading system includes a pair of light emitting diodes which are lit by the combined energization of the voltage section of an induction meter and the alternate positions of a pulse generating switch.

3,826,983

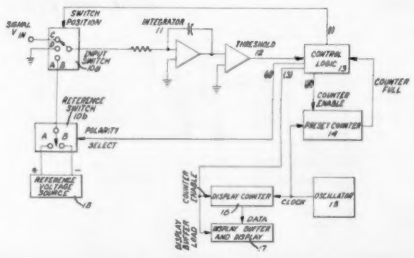
DIGITALLY SCALED DIGITAL VOLTMETER

Philip M. Garratt, Amsterdam, and Charles W. Eichelberger, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Apr. 2, 1973, Ser. No. 347,137

Int. Cl. G01r *17/06;* **H03k** *13/10*

U.S. Cl. 324—99 D **30 Claims**



An up-down integrator is connected by means of control logic to a preset counter in an up-integration period wherein the count set in the preset counter determines the full scale on the voltmeter. An input D.C. voltage signal having a magnitude proportional to an analog quantity measured by the voltmeter is supplied to the input of the integrator during the up-integration process. Upon the counter reaching the preset

count of clock pulses supplied thereto, the control logic removes the input signal from the integrator and switches a fixed D.C. reference voltage thereto during a down-integration period. During the down-integration process, a second counter counts the clock pulses and when the integrator output voltage reaches zero, a threshold circuit at the output of the integrator detects the zero crossover and the control logic removes the reference input from the integrator and connects it to ground as well as transferring the final count output of the second counter to a display which indicates this final count that represents the magnitude of the measured quantity.

3,826,984

MEASURING DEVICE FOR THE DYNAMIC MEASUREMENT OF SEMICONDUCTOR PARAMETERS AND METHOD OF MAKING SUCH A DEVICE

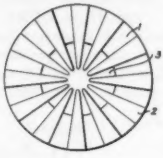
Richard Epple, Schwaigern, Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Germany

Continuation of Ser. No. 13,961, Feb. 25, 1970, abandoned. This application Jan. 24, 1972, Ser. No. 220,491

Claims priority, application Germany, Feb. 28, 1969, 1910314

Int. Cl. G01r *1/06, 31/02*

U.S. Cl. 324—158 P **10 Claims**



A measuring device for the dynamic measurement of semiconductor parameters comprises a plurality of flat metal contacts attached to a supporting member, the contacts having contact portions on one flat surface of each contact. Preferably the supporting member is recessed and the contacts extend into the recess. A method of making such a device is also disclosed.

3,826,985

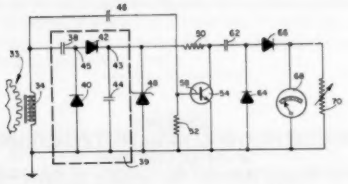
SELF-POWERED TACHOMETER CIRCUIT

Daryl D. Wiley, Elmhurst, Ill., assignor to Motorola, Inc., Franklin Park, Pa.

Continuation of Ser. No. 149,937, June 4, 1971, abandoned. This application June 20, 1973, Ser. No. 371,841

Int. Cl. G01p *3/48*

U.S. Cl. 324—173 **5 Claims**



A self-powered tachometer circuit utilizing variable reluctance pickup means applies the induced signal to a bridge network for full wave rectification after the maximum amplitude of the voltage has been limited and the signal differentiated to obtain pulses of uniform amplitude and uniform duration. The fully rectified signal is then applied to a meter for indicating repetition rate. Another embodiment using variable reluctance pickup means applies the induced pulses to a voltage doubler circuit for fast voltage pickup and operates a transistor switching circuit to drive the meter. A capacitor discharges through the transistor with input pulses of one polarity while the capacitor is charged through the meter with pulses of the opposite polarity.

3,826,986

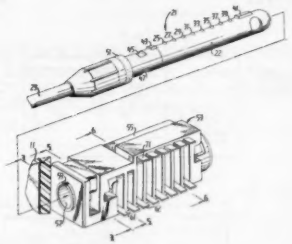
REMOTE CONTROL ADAPTER

Gene T. Brown, Orlando, and John V. Whiting, Altamonte Springs, both of Fla., assignors to Scope Incorporated, Reston, Va.

Filed Aug. 17, 1972, Ser. No. 271,779

Int. Cl. H04b *1/38*

U.S. Cl. 325—16 **6 Claims**



An adapter for use in a two-way radio wherein the antenna of the radio is removable from the housing of the radio. A well extends from the point of the antenna connection to within the housing and includes a plurality of normally closed switches relating to the radio circuitry. An elongated plug is rotatably insertable into the well and, upon insertion, the plug is of a dimension so as to bear against and open the normally closed switches within the well. A plurality of contacts mounted along the plug are located so as to mate with associated terminals of the now open switches when the plug is rotated within the housing. A cable is connected to the outer end of the plug and has a plurality of electrical leads connected to the various contacts on the plug. The cable extends outwardly from the radio housing and, therefore, provides a means for connecting the control of the radio to some remote control device.

3,826,987

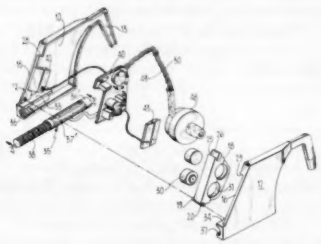
MINIATURE RADIO RECEIVER

Jack D. Stevens, 125 Willow Dr., Danville, Calif. 94526

Filed May 30, 1973, Ser. No. 365,313

Int. Cl. H04b *1/08*

U.S. Cl. 325—361 **8 Claims**



A miniature radio receiver adapted to be worn over the ear of the user. The electrical components of the radio receiver are housed in a casing comprising two complementary casing

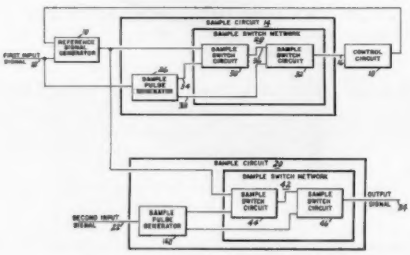
portions. An antenna has an externally threaded adjustment element protruding rearwardly of the housing. Each casing portion is provided with a mating internally threaded half-nut which cooperates with the adjustment element external threads to enable manual station selection. The radio receiver is powered by a hearing aid battery mounted in a pivotable holder at the rear of the casing.

3,826,988

PHASE DETECTOR

Robert G. Wise, Loveland, and Harold Dean Wiebe, Sharonville, both of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Sept. 13, 1973, Ser. No. 396,828
Int. Cl. H03b *3/04*
U.S. Cl. 328—133 **13 Claims**



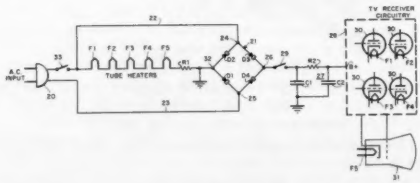
An apparatus is disclosed for producing an output signal as a function of the phase difference between two input signals of the same frequency. A signal generator is responsive to one of the input signals to produce a ramp function signal having a zero magnitude located approximately in the center of said ramp function. A first sample circuit samples the ramp function in response to the first input signal to produce a control signal. A control circuit is responsive to the control signal and connected to the signal generator for synchronizing the zero magnitude of the ramp function with a predetermined point in each period of the first input signal. Consequently, there is a fixed relationship between the ramp function and the first input signal which is adaptively maintained by the control circuit. A second sample circuit samples the ramp function in response to the second input signal and produces an output signal representing the phase difference between the input signals.

3,826,989

TUBE FILAMENT POWER SUPPLY

Emerald Eugene Keith, Fort Wayne, Ind., assignor to The Magnavox Company, Fort Wayne, Ind.

Filed Mar. 30, 1973, Ser. No. 346,543
Int. Cl. H03k *19/82*
U.S. Cl. 328—270 **3 Claims**



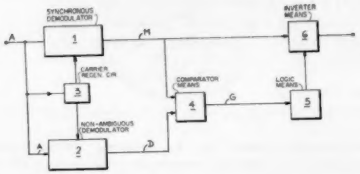
A power supply circuit for supplying power to a circuit having therein vacuum tubes which require a heater filament to heat the cathode to emission temperature. The power supply circuit has a bridge rectifier having four arms; each arm containing a rectifying element. As in conventional bridge rectifier circuits, two opposite ports of the bridge are connected to the a.c. power source and the remaining two ports are connected respectively to the ground and to the vacuum tube circuitry to supply B+ voltage to the circuitry. This invention places the heater filament circuit between the grounded port of the bridge rectifier and one of the a.c. power leads to provide half wave rectified power to the tube filaments, using a rectifying element of the bridge circuit to obtain the half wave rectified tube filament power, from the a.c. power source independently of B+ voltage circuit operation.

3,826,990

ANTI PHASE-AMBIGUITY FOR PHASE-SHIFT KEYING BINARY TRANSMISSION SYSTEMS

Luigi Pera, Oegstgeest, Netherlands, assignor to Organization Europeenne de Recherches Spatiales, Neuilly-sur-Seine, France

Filed Jan. 26, 1973, Ser. No. 327,112
Claims priority, application Belgium, Jan. 28, 1972, 113349
Int. Cl. H03d *3/18*
U.S. Cl. 329—50 **5 Claims**



A circuit arrangement to eliminate the phase ambiguity at a receive terminal in phase-shift keying binary transmission systems. The received PSK binary signal is simultaneously applied to a conventional synchronous demodulator and a so-called non-ambiguous demodulator which may be in analog or digital form. The outputs from both demodulators are compared to provide a signal having a first state when both demodulator outputs are in phase and having a second state when said demodulator outputs are in phase opposition. Logic means are provided to detect the state of the comparison signal in order to control inverter means adapted to reverse the demodulated original message from the synchronous demodulator when said comparison signal is in its second state.

3,826,991

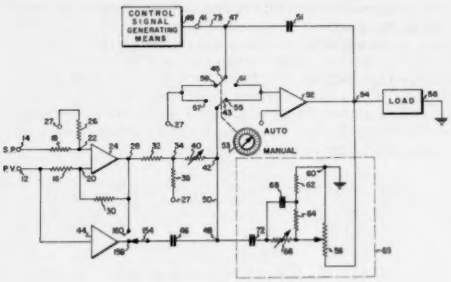
PROCESS CONTROLLER HAVING ELECTRONIC MANUAL CONTROL

James A. Hogan, Hatfield, Pa., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 9, 1972, Ser. No. 305,068
Int. Cl. H03f *1/36*
U.S. Cl. 330—1 A **5 Claims**

Circuitry operating from a uni-polar power supply having an error amplifier and a controller amplifier is arranged to modify a process variable signal and a set point signal and produce an output signal which is applied to a load element for controlling a process. The error amplifier applies the process vari-

able signal and the difference between the process variable signal and the set point signal to the controller amplifier. A



manually operated signal generator selectively provides a control signal for effecting a predetermined variation in the output signal.

3,826,992

DEVICE FOR AMPLIFICATION OF A COHERENT OPTICAL SIGNAL

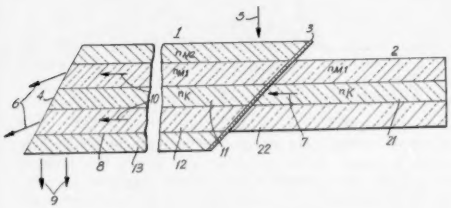
Wolfgang Friedl, Neckargemund, Germany, assignor to Eltro GmbH & Co., Heidelberg, Germany

Filed Mar. 23, 1973, Ser. No. 344,282

Claims priority, application Germany, Apr. 7, 1972, 2216747

Int. Cl. H01s *3/02*

U.S. Cl. 330—4.3 **3 Claims**



A device for the amplification of a coherent optical signal including a light amplifying conductive filament having an optically passive core encompassed by a sleeve including a selective fluorescent optically active material, which is in turn encompassed by an optically passive outer sleeve; a second light-conductive propagating filament being positioned in axial alignment therewith and formed of a core and encompassing sleeve of optically passive materials; and a spectroscopic divider being interposed between said amplifying and propagating light-conductive filaments.

3,826,993

METHOD FOR RAPIDLY EXCITING AND SUSTAINING OSCILLATIONS IN A RESONANT SYSTEM

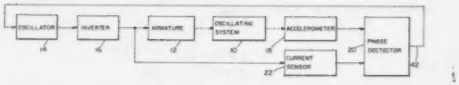
Roby Byron White, Cumberland, R.I., assignor to Brafton Corporation, Medfield, Mass.

Filed Sept. 18, 1970, Ser. No. 73,461

Int. Cl. B01d *51/08*; **H03b** *3/04*

U.S. Cl. 331—1 **4 Claims**

Method and apparatus for initiating and sustaining oscillations in a system having a free oscillatory period, comprising an oscillating means (preferably including a relaxation oscillator of the resistor-capacitor type) connected to apply a periodic driving force to the system, the oscillating means having an intrinsic period approximately equal to the period of the system, a detector connected to sense operation of the oscillating means and the oscillations, if any, of the system and to detect a phase difference therebetween, and circuitry with



an input connected to the detector, the circuitry connected to the oscillating means to be effective to modify the oscillations of the oscillating means so as to maintain the phase difference within predetermined limits.

3,826,994

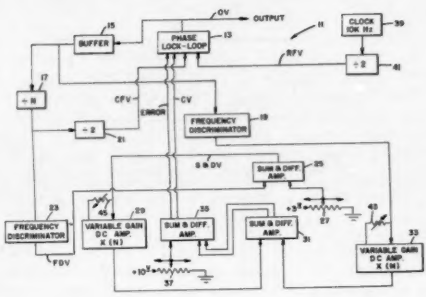
PHASE LOCK-LOOP FREQUENCY SYNTHESIZER

Harley J. Holliday, 83 Saratoga St., Quincy, Mass. 02171

Filed July 2, 1973, Ser. No. 375,414

Int. Cl. H03b *3/04*

U.S. Cl. 331—11 **7 Claims**



A phase lock-loop synthesizer having a coarse voltage adjustment loop, an error loop, and a phase comparison loop. The coarse voltage adjustment loop includes in series a phase lock-loop device, buffer, frequency discriminator, variable gain D.C. amplifier, sum and difference amplifiers. The error loop includes in series the phase lock-loop device, buffer, divide by N circuit, frequency discriminator, sum and difference amplifiers and variable gain D.C. amplifier. The phase comparison loop includes the phase lock-loop device, buffer, divide by N circuit, divide by 2 circuits and a clock. The phase lock-loop frequency synthesizer can select any one of many operating frequencies and automatically maintain the preselected frequency. The coarse adjustment loop functions to generate a control voltage to maintain the desired frequency from the synthesizer. The error voltage loop functions to detect and correct errors between the programmed frequency and the output frequency and to change the output frequency on demand. The phase comparison loop compares the output frequency with the standard frequency.

3,826,995

FREQUENCY GENERATORS

William Francis Miller, Chelmsford, England, assignor to The Marconi Company Limited, Chelmsford, Essex, England

Filed Oct. 30, 1972, Ser. No. 301,976

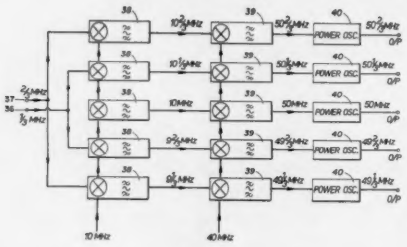
Claims priority, application Great Britain, Oct. 28, 1971, 50107/71

Int. Cl. H03b *21/02*

U.S. Cl. 331—38 **6 Claims**

A frequency generator produces a comb-like spectrum of frequencies, each of the frequencies being derived from a sin-

gle standard frequency. A relatively small number of predetermined frequencies are derived directly from the standard frequency and arranged in groups. Thereafter all frequencies in each group are mixed with all frequencies in all other



groups to produce the required comb-like frequency spectrum. The invention permits a large number of frequencies to be accurately derived from a single frequency in a practicable and economical manner.

3,826,996

METHOD OF OBTAINING A MEDIUM HAVING A NEGATIVE ABSORPTION COEFFICIENT IN THE X-RAY AND ULTRAVIOLET SPECTRAL RANGE AND A LASER FOR PRACTICAL APPLICATION OF SAID METHOD

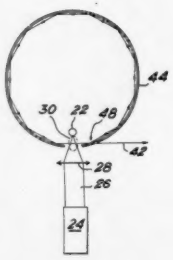
Pierre Jaegle, Palaiseau; Antoine Carillon, Paris; Pierre Dhez, Gif/Yvette; Gerard Jamelot, Chatenay Malabry; Alain Sureau, Orsay; Michel Cukier, Boulogne; Monique Dupeyrat, Paris, and Claudine Vogel, Maisons Alfort, all of France, assignors to Agence National De Valorisation de la Recherche, Anvar, France

Filed May 24, 1972, Ser. No. 256,425

Claims priority, application France, May 28, 1971, 71.19432

Int. Cl. H01s *3/09*

U.S. Cl. 331—94.5 **17 Claims**



A plasma is formed from a material in which the ions possess discrete metastable energy states interacting with the energy states of the continuum which are populated by the free electrons of the plasma. Population inversion is achieved between a number of these metastable states and states of lower energy, negative absorption being then produced for the transition which couples the metastable states with said states of lower energy.

In order to form the plasma, a giant-pulse laser beam is caused to interact in vacuum with a solid target formed of said material and is focused within the target near the surface through which the beam passes, the beam power being such as to ensure sufficiently populated metastable states of the ions of the material.

3,826,997

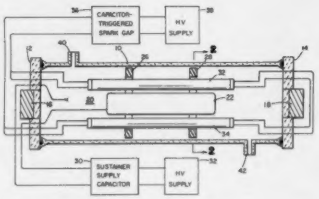
LASER PUMPED BY PHOTOIONIZATION GENERATED, ELECTRICALLY HEATED PLASMA

Ali Javan, Boston, and Jeffrey Steven Levine, Cambridge, both of Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Oct. 30, 1972, Ser. No. 301,894

Int. Cl. H01s *3/00*

U.S. Cl. 331—94.5 G **24 Claims**



A laser pumped by a photoionization generated, electrically heated plasma featuring plasma production by photoionization of a gas with light having an effective (in the sense of being utilizable to produce the plasma) photon energy spectrum lying below the ionization potential of the lasing constituent of the gas (and avoiding any strong absorptive bands in the gas), and heating of the plasma with an electric field at a voltage less than the avalanche breakdown voltage of the gas but high enough to effectively (i.e., directly, or through an intermediate gas) raise the lasing constituent to its lasing level.

3,826,998

GAS LASER

Helmut Kindl, Muenchen, and Heinz Westermeier, Neubiberg, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

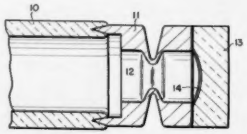
Continuation of Ser. No. 113,454, Feb. 8, 1971, abandoned.

This application June 6, 1973, Ser. No. 367,413

Claims priority, application Germany, Feb. 20, 1970, 2007939

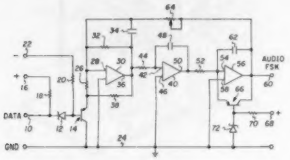
Int. Cl. H01s *3/00*

U.S. Cl. 331—94.5 C **3 Claims**



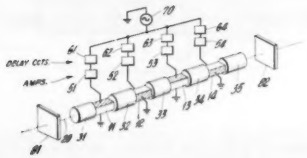
Gas laser assembly including an elongated tube having a mirror mount closing one end of the tube wherein a fitting on the tube end has a circumferentially weakened wall section and wherein the mirror is mounted on the fitting on the opposite side of the weakened wall section from the tube itself so that external application of pressure on the mirror mount will deform the weakened wall section to a sufficient degree to permit accurate adjustment of the mirror relative to the axis of the tube. The fitting preferably includes a closing window serving as a mounting for the mirror and secured to the fitting so that the adjustment of mirror angle can be effected externally of the device itself without permitting gas escape. The weakened wall section is in the form of a circumferential recess formed in the metal fitting or in the form of a circumferential stiffening corrugation.

3,826,999
FSK OSCILLATOR
Jerry G. Williford, Tustin, Calif., assignor to Collins Radio Company, Dallas, Tex.
Filed Apr. 18, 1973, Ser. No. 352,368
Int. Cl. H03b *5/24*
U.S. Cl. 331—108 R **3 Claims**



An oscillator using two integrators interconnected with means for completing a 360° phase reversal from input to output whereby oscillations occur and are maintained. One embodiment changes the frequency at which the 360+ phase reversal is completed for producing an FSK oscillator with a phase continuous output and another embodiment alters the point in the circuit at which the completion of 360° phase reversal occurs to produce a "reversible" oscillator having a phase continuous output.

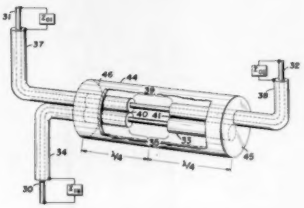
3,827,000
OPTICAL MODULATOR
Shigeo Matsushita; Atsufumi Ueki, and Motoaki Furukawa, all of Tokyo, Japan, assignors to Nippon Selfoc Company Limited, Tokyo, Japan
Filed Jan. 30, 1973, Ser. No. 328,009
Claims priority, application Japan, Feb. 1, 1972, 47-11929
Int. Cl. H01s *3/10*
U.S. Cl. 332—7.51 **1 Claim**



An optical modulator includes plural cascaded electrooptic crystals to effect optical amplitude or phase modulation. Transparent focusing light guides with a varying refractive index are disposed on the optical axis between adjacent crystals, such that the composite modulator exhibits improved sensitivity and bandwidth characteristics.

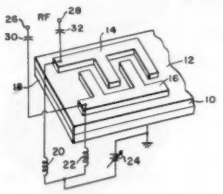
3,827,001
WIDE BAND SERIES-CONNECTED EQUAL AMPLITUDE POWER DIVIDER
Gordon J. Laughlin, Columbia, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed June 25, 1973, Ser. No. 373,235
Int. Cl. H01p *5/10, 5/12;* **H03h** *7/42*
U.S. Cl. 333—9 **11 Claims**

A wide band series-connected equal amplitude anti-phase power divider for use in connecting an unbalanced input line to two output lines having equal impedance, i.e., to balanced outputs. The input line terminates in a solid cylinder and shielded balanced outputs have a common center conductor with a gap separating the outer conductor into two portions.



Power division is accomplished by coupling an electric field across the small gap formed in the outer conductors.

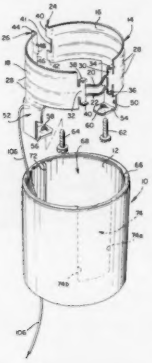
3,827,002
TUNABLE ELECTROACOUSTIC TRANSDUCERS
Gene Chao, Alexandria, Va., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.
Filed May 18, 1973, Ser. No. 361,699
Int. Cl. H03h *9/26, 9/30*
U.S. Cl. 333—72 **10 Claims**



A plurality of electroacoustic stripe electrodes are formed as a thin film on the surface of a piezoelectric semiconductor slab. The electrode-semiconductor interface forms a varactor junction. By selectively interconnecting the stripes and applying bias voltages, a tunable electroacoustic transducer or UHF filter is achieved.

3,827,003
SCREW SOCKET
James F. Sullivan, Eastchester, N.Y., assignor to Kulka Electric Corp., Mount Vernon, N.Y.
Filed May 9, 1973, Ser. No. 358,479
Int. Cl. H01r *17/20*
U.S. Cl. 339—180 **10 Claims**

An Edison-type lamp socket comprises a cylindrical insulating housing receivably mounting a contact shell formed of a pair of matching half sections which are connected at one of their respective ends by a pair of parallel spaced spring straps

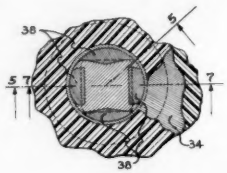


lamp base when the latter is threaded into the socket to provide firm resilient circumferential contact with the lamp base.

3,827,004
CIRCUIT BOARD PIN

Milike Vanden Heuvel, and Will Thelissen, both of S-Hertogenbosch, Netherlands, assignors to E. I. duPont de Nemours and Company, Wilmington, Del.

Filed Jan. 18, 1973, Ser. No. 324,755
Claims priority, application Netherlands, May 10, 1972, 7206313
Int. Cl. H05k *1/04*
U.S. Cl. 339—221 R **6 Claims**



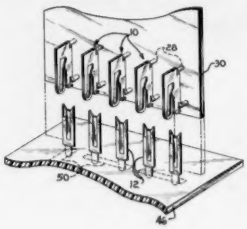
A pin for mounting in a hole in a circuit board without injuring plating in the hole or connections between such plating and multi-layer circuitry in the board. The pin includes pairs of collapsible fins which are bent toward each other when inserted into the hole.

3,827,005
ELECTRICAL CONNECTOR

Lindsay Carlton Friend, Camp Hill, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed May 9, 1973, Ser. No. 358,711
Int. Cl. H01r *13/12*
U.S. Cl. 339—258 P **3 Claims**

An electrical connector including a male and a female terminal both stamped-formed from uniform thickness metal stock. The flat female terminal includes a folded cantilever spring arm which holds the male terminal against a contact point. The blade-like male terminal is inserted between the spring arm and the contact point and includes a groove for

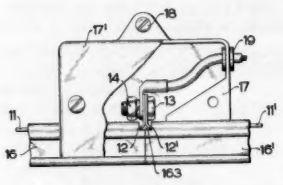


receiving the end of the folded cantilever spring arm to hold it in proper position when the terminals are assembled.

3,827,006
BUS BAR CONNECTION

Willi Hillmann, Kamen, Germany, assignor to Paul Vahle KG, Kamen, Germany

Filed June 5, 1972, Ser. No. 259,688
Claims priority, application Germany, June 5, 1971, 7121818
Int. Cl. H01r *9/00*
U.S. Cl. 339—21 R **8 Claims**



For connecting bus bar sections, which are formed of conducting strips arranged in a channel shaped insulating member, the successive strips are connected by bending the ends of the strips upwardly in a direction opposite the opening into the channel at right angles and connecting the angular parts by bolts. The connection may be enclosed in a casing, through which a lead-in may be connected to the bolt and thereby to the parts of the bus bar.

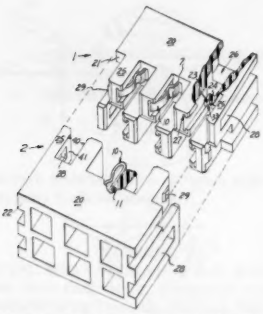
3,827,007
HERMAPHRODITIC ELECTRICAL CONNECTOR WITH FRONT RELEASABLE AND REAR REMOVABLE ELECTRICAL CONTACTS

Leroy W. Fairbairn, and John W. Dyce, both of Sidney, N.Y., assignors to The Bendix Corporation, Southfield, Mich.

Filed Mar. 26, 1973, Ser. No. 344,692
Int. Cl. H01r *25/00*
U.S. Cl. 339—49 R **2 Claims**

A one-piece molded hermaphroditic electrical connector for a multi-conductor cable. The connector includes a plurality of contacts, each of which are front releasable and rear removable. The contacts are self-retaining within the one-piece molded housing so that the contact does not unseat dur-

ing mating. The housing further includes a molded-in projection and slot that engage a corresponding slot and projection



in another identical housing, when mated therewith, to retain the two housings together.

3,827,008

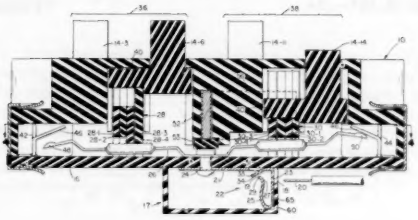
PUSHBUTTON SLIDE SWITCH

James A. Mallett, Dorchester, and Edward B. Mitchell, Belmont, both of Mass., assignors to Ark-Les Switch Corp., Watertown, Mass.

Division of Ser. No. 130,604, April 2, 1971, Pat. No. 3,719,786. This application Nov. 17, 1972, Ser. No. 307,483

Int. Cl. H01r *9/08*

U.S. Cl. 339—95 D **2 Claims**



A pushbutton slide switch includes two sets of switches, two sets of slides in side by side relationship, each slide set including actuating slides movable for selectively actuating a switch within the corresponding switch set, and interlocking disengagement means comprising an interlock connector and an interlock slide in each slide set. The interlock slides are movable by the connector for simultaneous disengagement of at least one switch in a first switch set in response to closing a switch in the other switch set.

3,827,009

ELECTRIC SWITCHING DEVICES

David Ellis Thomas, Enfield, England, assignor to Sangamo Weston Limited, Enfield, Middlesex, England

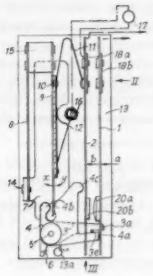
Filed Jan. 15, 1973, Ser. No. 323,428

Claims priority, application Great Britain, Jan. 25, 1972, 3496/72

Int. Cl. H01h *61/02*

U.S. Cl. 337—77 **13 Claims**

An electric relay operative to effect switching operations at predetermined amplitude levels of a controlling current whose amplitude fluctuates relatively slowly with respect to time, such as the output of a light sensitive device subjected to daylight. The relay comprises a pair of switch contacts whose movements towards and away from each other are controlled by a latching lever system, the operating motions for said



latching lever system being provided by a bimetal element which is subjected to heat from an electric heater arranged for energisation by the fluctuating control current.

3,827,010

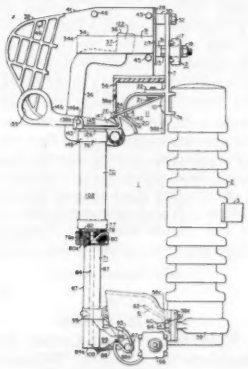
COMPOSITE SECTIONALIZED OPEN-TYPE DROP-OUT-TYPE FUSIBLE OUTPUT WITH SERIES ENCLOSED CURRENT LIMITING FUSE

Frank L. Cameron; John W. Carothers, both of Irwin, and Woodrow G. Shaw, Export, all of Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 6, 1972, Ser. No. 232,129

Int. Cl. H01h *71/20*

U.S. Cl. 337—168 **26 Claims**



A sectionalized open-type drop-out fusible cutout is provided having a high-current interrupting section, a mechanically-connected low-current interrupting section in electrical series therewith, the low-current section including a tensioned fuse and attached fuse-link cable, which, when fused, releasing the cable, effecting the breaking of the associated toggle linkage, and drop-out indicating action of the open-type fusible device.

A high-current section includes a current-limiting fuse section, which is operative only during the interruption of heavy fault currents, and not operable during the interruption of relatively low overload currents, which overload currents are interrupted solely by the low-current section. The low-current section is of the expulsion type, having a fuse-link cable extending out through the lower open end of the fuse tube thereof, and maintaining the toggle linkage in its underset condition. The fusing of the low-current interrupting section, ef-

fects fusing of the fuse link and releases the fuse-link cable, and consequent breaking of the toggle linkage to permit consequent drop-out action of the open-type fusible cutout device.

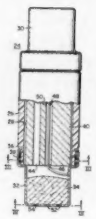
The aforesaid composite sectionalized open-type fusible device may be associated, with a load-break extension device, which will permit manual load breaking of load currents without either of the series fuse sections operating. Preferably, associated with the load-break device is an auxiliary arc-chute structure, serving to interrupt the load current within the arc-chute structure upon manual operation of the cutout device.

3,827,011

FUSE ASSEMBLY FOR OIL-FILLED TRANSFORMERS

Harry R. Braunstein, Athens, Ga., assignor to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Mar. 8, 1973, Ser. No. 339,243
Int. Cl. H01h *85/18*
U.S. Cl. 337—276 **1 Claim**



A fuse assembly including a body member with condenser caps attached to each end thereof. A fuse wire is connected to the condenser caps and extends through one opening in a block of arc-extinguishing material which is contained within the body member. Another opening in the block is positioned parallel to the opening containing the fuse wire. With moderate fault currents, arcing as the fuse wire melts is confined within the opening containing the fuse wire. With large fault currents, the arc-extinguishing material between the two openings ruptures, thus enlarging the arcing passageway to reduce the arc energy. Hot gases and vapors generated during arcing melt solder which seals openings in the condenser caps, thus the gases and vapors may pass through the unsealed openings to relieve pressure within the fuse assembly.

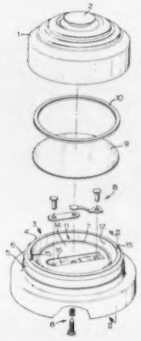
3,827,012

FIRE DETECTOR

Jack Duggan, Willowdale, Ontario, Canada, assignor to Fire Devices Manufacturing Limited, Willowdale, Ontario, Canada

Filed Apr. 10, 1973, Ser. No. 349,651
Int. Cl. H01h *37.40*
U.S. Cl. 337—320 **3 Claims**

A fire detector has a diphragm within a chamber and an air passage between the chamber and the ambient within which the fire detector is mounted so as to allow air flow at a predetermined rate. The fire detector has electrical contacts arranged beneath the diaphragm so that an increase of air pressure against the diaphragm causes the diaphragm to move against the contacts and to close the same. Thus, the fire detector is capable of responding either to a rate of rise of temperature faster than a predetermined rate, or to a temperature higher than a predetermined temperature. The diaphragm - which is a polyimide film material - overlies a ridge near its periphery and is secured thereto by a gasket overlying the periphery of the diaphragm and co-operating with the ridge so as to secure the diaphragm. A bushing screw having a bore axially formed therein is threaded into the air passage, and air flow from the air chamber is determined by the size of the bore in the bushing screw. Re-calibration is accomplished simply by replacing the bushing screw with one having a different sized bore.

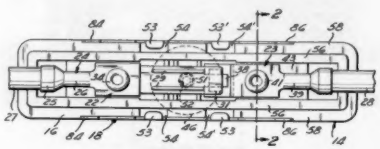


3,827,013

THERMOSTAT WITH MOUNTING MEANS

Walter C. Kowalski, and Edward G. Them, both of Mansfield, Ohio, assignors to Therm-O-Disc Incorporated, Mansfield, Ohio

Filed July 11, 1973, Ser. No. 378,280
Int. Cl. H01h *37/52*
U.S. Cl. 337—354 **7 Claims**



There is provided an improved snap disc-operated thermostat switch structure which is characterized by an improved disc retainer and slotted plate mounting structure. The improved disc retainer not only holds the body members together for enclosing the switch mechanism, terminals and leads, but includes slotted plate mounting means projecting outwardly therefrom for insertion into a slot in a plate, e.g., a sheet metal plate as a radiator housing, and snap locking engagement therewith. In more specific embodiments, resilient finger means are provided for coaction with the mounting means to hold the thermostat tightly against the slotted plate, for example, to prevent annoying rattling.

3,827,014

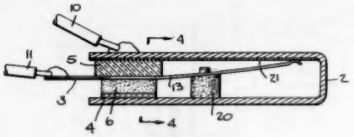
THERMAL PROTECTOR

Glenn E. Wehl, North Canton, Ohio, assignor to Portage Electric Products Inc., North Canton, Ohio

Filed Sept. 24, 1973, Ser. No. 399,819
Int. Cl. H01h *37/76*
U.S. Cl. 337—407 **7 Claims**

A thermally actuable switch is provided with two conductive members having a first portion of each selectively contacting and a second portion of each separated by an insulat-

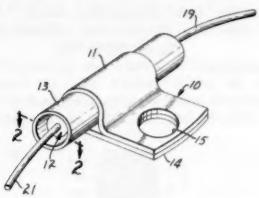
ing material, at least one of the conductors being spring biased to one position and being held in a second position by a temperature sensitive material which collapses when a predetermined temperature has been reached.



3,827,015
MOUNTING MEANS FOR THERMAL SWITCHES

James H. Ball, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 13, 1973, Ser. No. 350,740
Int. Cl. H01h 37/04
U.S. Cl. 337—414 12 Claims

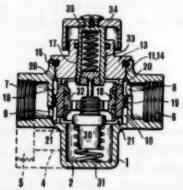


A mounting device for conveniently and inexpensively mounting thermal switches is provided, comprising (a) an annular support means of heat-conductive material adapted to be positioned coaxially around the switch, and (b) a fastening means of heat-conductive material extending integrally from the annular support means for attaching the annular support means to a heat-transmitting part of an electrical device whose temperature is to be sensed by the thermal switch.

3,827,016
THERMOSTATIC MIXER FOR HYDRAULIC SYSTEMS

Alfons Knapp, Bleicherstrasse 3, Biberach/Riss (BRD), Germany

Filed Feb. 6, 1973, Ser. No. 330,032
Claims priority, application Italy, Feb. 29, 1972, 67629/72
Int. Cl. G05d 23/13
U.S. Cl. 236—12 R 6 Claims



A thermostatic mixer for hydraulic systems, wherein the passages for the hot and cold water within the body of the mixer are mutually spaced in axial direction and, in the mounted mixer, they are separated the one another by a tubular ring provided with a sealing gasket seated between said passages, the tubular ring is kept in position by a detachable cover, and several radial passages serve for allowing the hot and cold water respectively to pass through the tubular ring, to a single inner cavity wherein a control valve is actuated by a thermometric bulb.

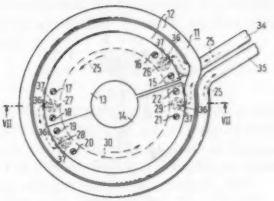
ERRATA

For Classes 335—285, 335—285 and 335—285 see: Patents Nos. 3,827,019 thru 3,827,021

3,827,017
ADJUSTABLE INDUCTION COIL FOR HEATING SEMICONDUCTOR RODS

Wolfgang Keller, Munich, Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Nov. 24, 1972, Ser. No. 309,420
Claims priority, application Germany, Dec. 7, 1971, 2160694
Int. Cl. H01f 27/28
U.S. Cl. 336—62 2 Claims

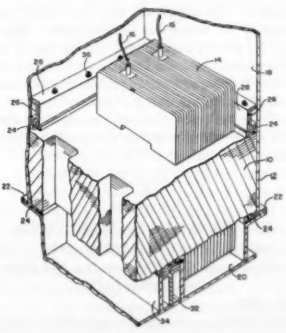


An adjustable induction coil is made up of several component parts, some of which may be disassembled from the remainder in order effectively to enlarge the inner diameter of the coil, or to remove the coil from association with a semiconductor rod passing through the coil, and which is heated by the coil. The coil is provided with conduits adapted to support a fluid flow for cooling the coil during operation.

3,827,018
POWER TRANSFORMER HAVING FLUX SHIELDS SURROUNDING METALLIC STRUCTURAL MEMBERS

Michael W. Thomas, Muncie, and Virgil L. Boaz, Daleville, both of Ind., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Nov. 2, 1973, Ser. No. 412,514
Int. Cl. H01f 15/04
U.S. Cl. 336—84 6 Claims



Structural members projecting from the transformer tank are surrounded by flux shields to prevent leakage flux from en-

tering and heating the structural members. The flux shields are constructed of a non-magnetic material which has relatively good electrical conductivity. Current induced into the flux shield by the leakage flux produces flux which counteracts the leakage flux and reduces heating of the structural members.

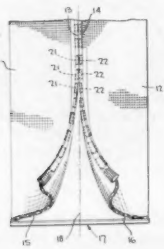
ERRATA

For Classes 337—77, 337—168, 337—276, 337—320, 337—354, 337—407 and 337—414 see:
Patents Nos. 3,827,009 thru 3,827,015

3,827,019
MAGNETIC CLOSURE

Gideon P. Serbu, Box 280, Rt. 1, Accokeek, Md. 20607

Filed Feb. 21, 1973, Ser. No. 334,234
Int. Cl. H01f 7/20
U.S. Cl. 335—285 13 Claims



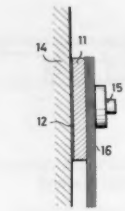
A closure device for an opening having a boundary defined by a border of a flexible panel and a border along another member, which may be a flexible panel, includes a plurality of spaced permanent magnets that run downwardly along one of the borders from an apex where the two borders join. Each of the permanent magnets includes strong magnetic pole faces on a surface abutting the boundary to establish a magnetic force across the boundary in a plane substantially parallel to a plane in which the flexible panel lies while the opening is closed. The permanent magnets have weak magnetic poles on the opposite surface thereof, remote from the boundary. On the other border, a plurality of spaced magnetic force attractive elements are provided in positions aligned with the permanent magnets. The elements may be either second permanent magnets or members of relatively high magnetic permeability. As the flexible panel moves about the apex by gravity from an open condition toward a closed position the magnetic forces bring and hold successive segments of the two borders in abutting relationship. The portions of the border that are closer to the apex generally come into abutting relationship with each other prior to the portions of the border that are farther from the apex.

3,827,020
UNIVERSAL HOLDING DEVICES

Takeshi Okamoto, 2-3-9, Shibuya, Shibuya-ku, Tokyo, Japan

Filed Aug. 27, 1973, Ser. No. 391,653
Int. Cl. H01f 7/20
U.S. Cl. 335—285 7 Claims

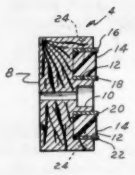
A universal holding device for securing a memo pad of paper sheets and the like on a supporting wall includes an outer mounting unit and an inner coupling unit that is attached to the wall by an adhesive coated member. Both the mounting and coupling units are provided with suitable magnetic means which are aligned to operatively hold the memo pad in a sandwich manner therebetween. The use of the adhesive coated device eliminates the use of fastener means such as nails and screws that could scar or mar the wall.



3,827,021
MAGNET GRIPPING FIXTURE

Russell E. Phelon, Rio Piedras, P.R., assignor to Phelon Magnagrip Co., Inc., East Longmeadow, Mass.

Filed Aug. 13, 1973, Ser. No. 387,923
Int. Cl. H01f 7/20
U.S. Cl. 335—285 3 Claims



A magnet gripping fixture which has at least two continuous, laterally spaced parallel permanent magnetic rods extending longitudinally from end-to-end of a supporting body of non-magnetic material. Each magnetic rod is a flexible permanent magnet extrusion of uniform flux distribution throughout its length and is sandwiched between a pair of ferromagnetic strips which provide flux concentrating pole pieces therefor.

ERRATA

For Classes 339—180, 339—221, 339—258, 339—21, 339—49 and 339—95 see:
Patents Nos. 3,827,003 thru 3,827,008

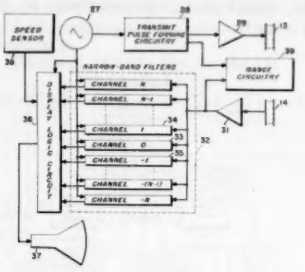
3,827,022
INDUCED DOPPLER SONAR

Newell O. Booth, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 23, 1973, Ser. No. 353,263
Int. Cl. G01s 3/80, 7/52
U.S. Cl. 340—3 R 7 Claims

An object bearing detection system comprises a broad-band transmitting electroacoustic transducer and a similar broadband receiving electroacoustic transducer. The two electroacoustic transducers are combined in an active ranging system such that the transducer is responsible to echo returns

from signals produced by the transmitting transducer. The electrical output from the receiving transducer is processed by



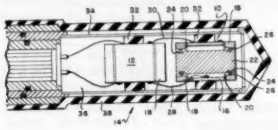
a plurality of narrow-band filters to obtain bearing information from the returned signals as a function of the Doppler shift of the signals.

3,827,023

PIEZOELECTRIC TRANSDUCER HAVING GOOD SENSITIVITY OVER A WIDE RANGE OF TEMPERATURE AND PRESSURE

Theodore A. Henriquez, and Allan C. Tims, both of Orlando, Fla., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 25, 1972, Ser. No. 256,864
Int. Cl. H04b *13/00*
U.S. Cl. 340—10 **5 Claims**



An electroacoustic transducer wherein the sensing elements comprise a radially polarized ceramic cylinder having annular rings attached to the ends of the ceramic cylinder and a cylindrical insert, centered in said cylinder, is sealed by O rings between the insert and the annular rings. A pair of the ceramic cylinders are connected electrically to form an assembly. The assembly is mounted by rubber mounts in a frame which is surrounded by an expanded metal electrostatic shield. The whole assembly is enclosed within a castor oil filled butyl boot. The assembly has good sensitivity over a wide frequency range.

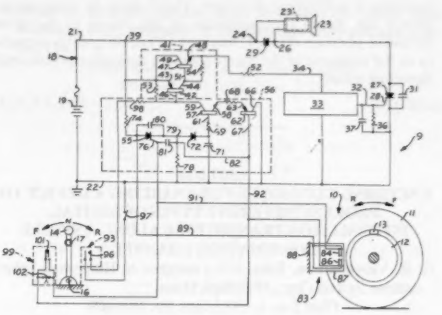
3,827,024

MOTION ALARM FOR VEHICLES

Arlynn W. Anderson, Peoria; Donald F. Coleman, Dunlap; Joe E. Fuzzell, Peoria; Jonny R. Greiner, Decatur, and Robert G. Miller, Metamora, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed June 12, 1972, Ser. No. 261,605
Int. Cl. B60q *5/00*
U.S. Cl. 340—70 **9 Claims**

A motion alarm for vehicles employs sensors actuated by elements of the vehicle drive system and control system to sound an audible alarm when the vehicle is deliberately backed up and also if uncontrolled unexpected motion occurs in either direction including times when the vehicle has been parked and is unattended. A logic circuit differentiates between reverse motion and forward motion in a manner



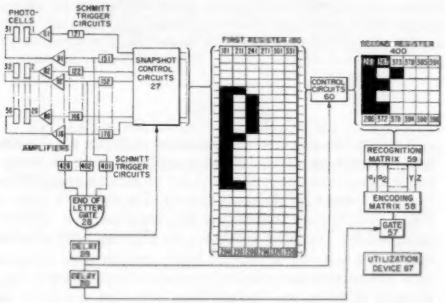
whereby reverse motion always results in sounding an alarm while deliberate controlled forward motion maintains the alarm quiescent.

3,827,025

READING MACHINE EMPLOYING A TWO-DIMENSIONAL MULTIPLE SNAPSHOT PROCESS

Hans A. Mauch, and Glendon Smith, both of Dayton, Ohio, assignors to The United States of America as represented by the Veterans Administration, Washington, D.C.

Filed Aug. 10, 1971, Ser. No. 170,551
Int. Cl. G06k *9/12*
U.S. Cl. 340—146.3 F **20 Claims**



Apparatus for scanning and translating discrete objects and their images into identifying signals characterized by an image receiving surface including a plurality of photocells arranged in adjacent vertical columns. In use thereof the columns of sensing photocells are caused to scan the image in one direction. The photocells of the respective columns are so related that, at each of a series of locations spaced in said one direction, any one or more of the cells, as determined by the configuration of the image per se, may function as a "key" to trigger an electrical snapshot by a cell or cells then viewing a particular definitive portion of this image. Snapshots in one case are determined by the pertaining cells having been subjected to a certain number of "light to dark" or "dark to light" transitions in the scanning procedure and succeeding snapshots may be similarly determined. In another case the invention provides that the triggering of snapshots by key cells in one column may cause a conditioning of cells on the same level in another column to trigger following snapshots.

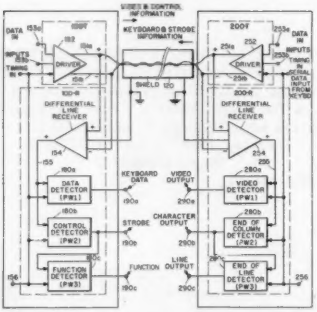
Means are included to provide that the snapshots taken of the image in the one direction are electrically stored and the stored representations thereof subjected to an electrical scanning in a different direction. This is done in a manner to reduce the stored representation of the image to the most definitive portions thereof, whereby to enable greater accuracy in the read-out of the image scanned through conventional signalling means.

3,827,026

ENCODING TECHNIQUE FOR ENABLING A DEVICE TO PROCESS DIFFERENT TYPES OF DIGITAL INFORMATION TRANSMITTED ALONG A SINGLE INFORMATION CHANNEL

G. R. Viswanathan, Troy, N.Y., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 4, 1971, Ser. No. 103,409
Int. Cl. H04q *1/32*
U.S. Cl. 340—167 A **16 Claims**



A data processing system includes a first device which transmits different types of pulse coded digital information along a single channel to a second device for separation and distribution to a number of different outputs. The different types of digital information transmitted are encoded with different pulse widths. The pulse widths for the different types of information are selected to provide highly reliable data transmission. The second device includes a receive section which has a plurality of detectors. Each of these detectors operate to detect only the pulse coded digital information encoded with predetermined pulse widths and pass them to its output. The system accommodates bidirectional transmission and processing of the encoded digital information by including like transmit and receive sections within each device.

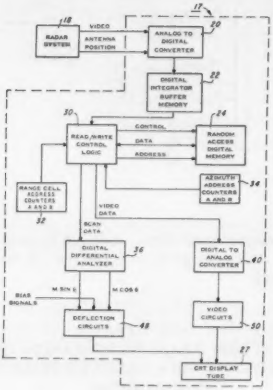
3,827,027

METHOD AND APPARATUS FOR PRODUCING VARIABLE FORMATS FROM A DIGITAL MEMORY

Glendon D. Towson, and James H. Koberlein, both of Garland, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Sept. 22, 1971, Ser. No. 182,674
Int. Cl. G11c *7/00*; G01s *9/00*
U.S. Cl. 340—172.5 **6 Claims**

A method and system are disclosed in which radar data are collected, integrated to improve the signal quality and stored in a random access digital memory. The addressing sequences for storing the data in the digital memory are selected such that the data can be read and used to update a display without requiring complicated transformations of the address



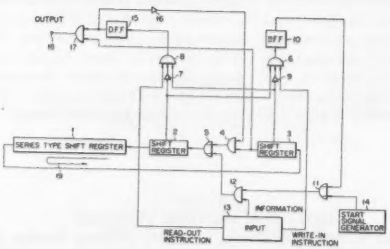
sequences used to store the data into the address sequences for reading the data. The digital memory also provides true freeze mode operation of the display. The system can also be used to display infrared scanner data.

3,827,028

CONTROL MEANS FOR INFORMATION STORAGE IN A DYNAMIC SHIFT MEMORY

Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed June 1, 1972, Ser. No. 258,762
Claims priority, application Japan, July 26, 1971, 46-55264
Int. Cl. G06f *3/00*
U.S. Cl. 340—172.5 **16 Claims**



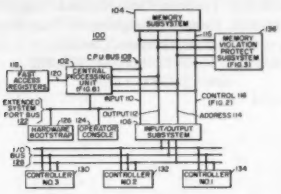
A dynamic shift memory means includes a plurality of serially connected memory units, some of the serially connected memory units selectively storing one character of information. The arrangement includes various means for signifying whether character information is to be stored in the memory means or is to be read out of the memory means and for controlling the shifting process without requiring additional means for generating timing signals, thus simplifying the resultant arrangement.

3,827,029

MEMORY AND PROGRAM PROTECTION SYSTEM FOR A DIGITAL COMPUTER SYSTEM

John C. Schlotterer, Casselberry, Fla., and Lionel S. Smith, Jr., San Jose, Calif., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed Sept. 25, 1972, Ser. No. 292,221
Int. Cl. G06f 11/00
U.S. Cl. 340—172.5 10 Claims



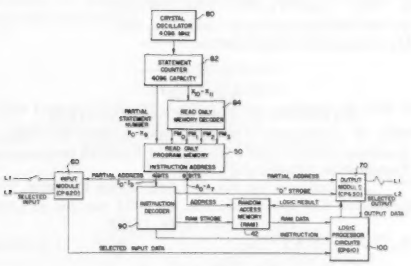
A small size digital computer system is designed so that a hardware memory violation protect subsystem may be added to the computer system as a hardware option. The memory protect subsystem includes hardware which may operate in parallel with the digital computer system memory subsystem and which monitors each attempt to alter data within the memory subsystem. Any attempt to alter data within a protected region may be defeated. Following such an attempt, program execution is interrupted and program control is transferred to the computer system executive software. The computer system is also designed so that it may either modify or prevent the execution of certain instructions at times when the memory protect subsystem is in operation so as to defeat all attempts on the part of any software entity to destroy the integrity of the operating system.

3,827,030

PROGRAMMABLE CONTROLLER USING A RANDOM ACCESS MEMORY

William H. Seipp, Bettendorf, Iowa, assignor to Gulf & Western Industries, Inc., New York, N.Y.

Filed Jan. 29, 1973, Ser. No. 327,872
Int. Cl. G05b 11/00; G06f 11/00
U.S. Cl. 340—172.5 67 Claims



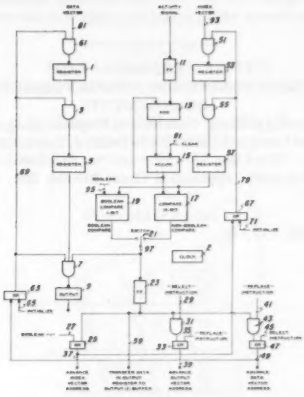
A programmable controller of the type used to process logic from input and output circuits for controlling the operation of machines, manufacturing processes and similar mechanical systems. The controller is operated by a series of successive binary coded program statements which are separately processed to perform logic operations or functions in a single bit accumulator register and to store the logic from the accumulator register in selected output circuits or in selected locations of a random access memory forming part of the controller and separate from the input or output circuits.

3,827,031

ELEMENT SELECT/REPLACE APPARATUS FOR A VECTOR COMPUTING SYSTEM

William D. Kastner, Austin, Tex., and Gary W. Cobb, East Windsor, N.J., assignors to Instruments Incorporated, Dallas, Tex.

Filed Mar. 19, 1973, Ser. No. 342,666
Int. Cl. G06f 7/06, 7/10, 7/22
U.S. Cl. 340—172.5 18 Claims



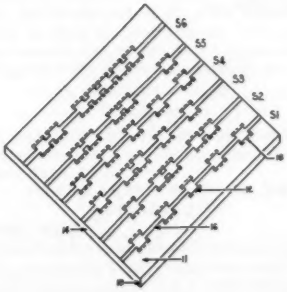
An apparatus is disclosed for processing vector data streams in such a way that, in a first mode, the data elements of a first vector stream are selected according to indices of those elements specified by a second vector stream. The selected elements are output in a single output vector stream. In a second mode the apparatus replaces elements in a third vector stream by elements in a first vector stream as specified by the indices in a second vector stream.

3,827,032

DIFFERENTIALLY COUPLED MEMORY ARRAYS

Warwick R. Abbott, Woburn, and Theodore C. Chen, Concord, both of Mass., assignors to Integrated Memories, Inc., Wilmington, Mass.

Filed June 19, 1972, Ser. No. 264,000
Int. Cl. G11c 11/24, 17/00
U.S. Cl. 340—173 SP 9 Claims



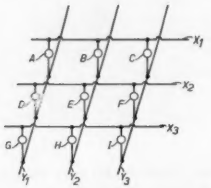
A read-only memory plane has a plurality of storage elements arranged in a matrix of columns and rows. Drive means are associated with the columns of elements for energizing the elements and a plurality of sense lines are associated with the row of elements for determining the information content of

the storage elements. A second matrix of storage elements is within the memory plane in tandem with the first matrix of elements. A second set of drive means and sense lines are provided for the read-out of the second array of storage elements. The information read-out is manifest in the presence or absence of signals induced in the sense lines when the storage elements are energized. Pairs of sense lines one in each pair from the first array and the other from the second array, are coupled to respective differential amplifiers for amplifying the induced signals and for rejecting any stray signals including background noise which would be common to the two arrays.

3,827,033
SEMI-CONDUCTOR MEMORY DEVICE ARRANGEMENTS

Robert Mark Quilliam, Chelmsford, England, assignor to The Marconi Company Limited, Chelmsford, Essex, England

Filed Dec. 15, 1972, Ser. No. 315,588
Claims priority, application Great Britain, Dec. 18, 1971, 58943/71
Int. Cl. G11c *11/36*
U.S. Cl. 340—173 R **18 Claims**

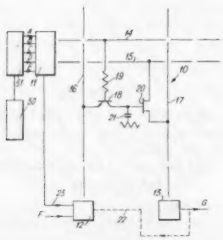


A memory device array including two sets of conductors, a plurality of amorphous semi-conductor memory devices each associated with an individual pair of conductors chosen one from each set and having a first electrode connected to each of the associated pair of conductors through a respective resistor, and means for enabling connection of a second electrode of each of the devices to a source of potential.

3,827,034
SEMICONDUCTOR INFORMATION STORAGE DEVICES

Stephen Francis Colaco, Manchester, England, assignor to Ferranti Limited, Holiinwood, Lancashire, England

Filed Sept. 14, 1972, Ser. No. 288,910
Int. Cl. G11c *11/24*, *11/40*
U.S. Cl. 340—173 CA **34 Claims**

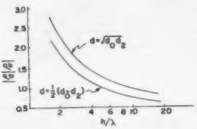


A cell of a monolithic semiconductor memory store comprises a bi-directional bipolar transistor, with a capacitance connected to the collector and, with the bipolar transistor capable of conducting in the reverse direction, the capacitance being charged or not charged to store an information bit in the cell, and switching means, such as a field-effect transistor, which is either switched ON or OFF in accordance with the potential difference across the capacitance, there being associated with the cell reading means arranged to produce an output indicative of whether or not the switching means is conducting.

3,827,035
MAGNETIC DOMAIN PROPAGATION PLATE WITH MINIMIZED TEMPERATURE SENSITIVITY

Edward Della Torre, Toronto, Ontario, and Magid Dimyan, Hamilton, Ontario, Canada, assignors to Canadian Patents and Development Limited, Ontario, Canada

Filed Oct. 26, 1972, Ser. No. 300,885
Int. Cl. G11c *11/14*
U.S. Cl. 340—174 TF **2 Claims**



A magnetic domain propagation plate having a preferred direction of magnetization normal to the plate and being made of a material and having a plate thickness such that the diameter of bubbles formed in the plate have a minimum sensitivity to temperature variations, these parameters being determined by minimizing the quality ρ_d:

$$\rho_d = \frac{\left(F + \frac{\lambda}{h}\right) M_s - \frac{\lambda}{h}\rho_\sigma}{S_o + \frac{\lambda}{h}}$$

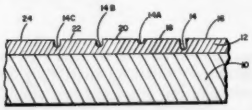
where

$\rho_d = (1/d)\, dd/d\mathrm{T}$
d = bubble diameter
T = temperature
F = magnetostatic force function
λ = material length
h = plate thickness
S_o = radial stability function
$\rho \quad = 1/ \quad (do/d\mathrm{T})\, \sigma M_s = 1/M_s\,(dM_s/d\mathrm{T})$
σ = wall energy density per unit area, and
M_s = saturation magnetization.

3,827,036
MAGNETIC BUBBLE DOMAIN SYSTEM

Cedric F. O'Donnell, Fullerton, and George R. Pulliam, Anaheim, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 123,642, March 12, 1971, abandoned. This application Apr. 23, 1973, Ser. No. 353,265
Int. Cl. G11c *11/14*, *19/00*
U.S. Cl. 340—174 TF **6 Claims**



A magnetic bubble domain system comprising one or more channels or paths of magnetic bubble domain material on a supporting substrate is described. The channel of magnetic bubble domain material is defined by grooves extending par-

tially into a thin film of the magnetic bubble domain material. The grooves extend through the film to the extent of 1 to 99 percent of the thickness of the film. The movement of bubble domains along a channel is effected by the repulsive or interaction forces between bubble domains which are present in a channel when a bubble domain is formed or propagated near another bubble domain.

3,827,037

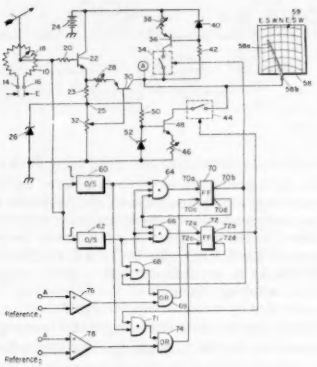
WIND DIRECTION MONITOR SCALE CONVERTER

Anthony Roy Willoughby, Baltimore, Md., assignor to The Bendix Corporation, Southfield, Mich.

Filed Mar. 20, 1973, Ser. No. 343,060

Int. Cl. G08c *19/04*

U.S. Cl. 340—177 R **11 Claims**



A wind vane drives a movable contact of a voltage divider comprised of a 360° potentiometer. The movable contact is connected into an electrical summing point in an electrical circuit which responds to a discontinuity in the potentiometer output to add or subtract a sufficient electrical quantity at the summing point to compensate for the discontinuity. In addition, at the end of the electrical range of the circuit an electrical quantity equivalent to a predetermined amount of vane rotation is added or subtracted from the summing point as required to reposition the electrical sum to a valve intermediate of its range.

3,827,038

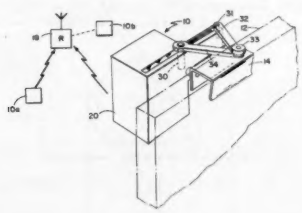
ALARM SYSTEM

John George Willis, Wakefield, Mass., assignor to Solid State Technology, Inc., Wilmington, Mass.

Filed Oct. 26, 1972, Ser. No. 300,913

Int. Cl. G08b *13/02*

U.S. Cl. 340—224 **4 Claims**



An alarm system having a central radio receiver and a plurality of independent alarm devices for mounting on a door or the like movable to and from a closed position adjacent a stationary door frame element or the like toward an open position. Each device comprises an electro-mechanical generator, a radio transmitter energized by it and a load-and-fire mechanism having loading means movable into loaded position upon movement of the door into closed position and firing means triggered by release of the loading means upon movement of the door from its closed position to drive the generator and operate the radio transmitter for reception by the central radio receiver.

3,827,039

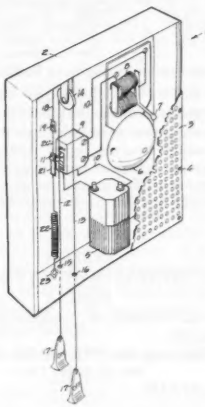
PORTABLE ALARM SYSTEM

Joseph M. Agnese, 2768 Greenwich, San Francisco, Calif. 94123

Filed Jan. 31, 1973, Ser. No. 328,332

Int. Cl. G08b *17/02*

U.S. Cl. 340—227.1 **12 Claims**



A multi-purpose, portable alarm system comprising an electrically-powered bell selectively controllable either manually or automatically by means of a fusible element responsive to heat. The alarm bell circuit is provided with on on-off switch which is controllable, in the manual mode, by means of two pull cords extending externally of the portable unit. In the automatic mode, the switch is controlled by a spring-loaded, lost-motion loop member, a portion of which is connected to a tensioned, fusible element which, when broken, allows the spring bias to force the switch to the "on" position. The system is conveniently housed in a cabinet which can be mounted upon a wall, or carried as a portable unit.

3,827,040

SAFETY REMINDER SYSTEM FOR POWER MACHINES

Charles Clair Simmons, Tulsa, Okla., assignor to Auto Crane Company, Tulsa, Okla.

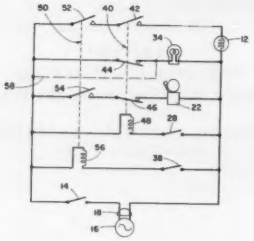
Filed Jan. 16, 1973, Ser. No. 324,208

Int. Cl. G08b *21/00*

U.S. Cl. 340—267 R **6 Claims**

A safety equipment system for operators of power machines comprising an operator's safety equipment holder located adjacent to the power machine and a safety equipment switch carried by the equipment holder. The safety equipment holder includes a switch operator arm extending outwardly from the equipment holder for attaching the safety equipment thereto. When the safety equipment is supported on the operator arm, the operator arm will engage the safety equipment switch to hold the same in an open position; conversely removal of the safety equipment from the operator arm will cause the safety

equipment switch to close. A safety floor mat is located at the operator's position adjacent to the power machine, and a mat switch is carried by the floor mat and operable by the operator standing thereon. A machine power switch is carried by the machine and operably connected to the machine through the equipment switch and the mat switch whereby activation of the equipment switch and mat switch is necessary before power is applied to the machine. An equipment use reminder



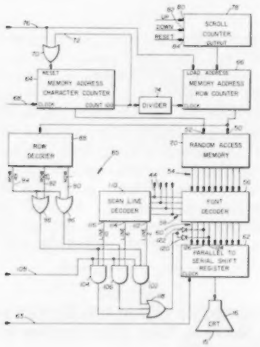
lamp is disposed on the equipment holder and operably connected to the power switch through the equipment switch. An alarm is disposed adjacent to the power machine and operably connected to the power switch through the equipment switch and the mat switch whereby, upon closing the power switch, the equipment use reminder lamp is activated, and upon activating the mat switching means, the alarm is activated, if the safety equipment has not been removed from the operator arm.

3,827,041

DISPLAY APPARATUS WITH VISUAL SEGMENT INDICIA

Harold D. Cook, Wheaton, Ill., assignor to Teletype Corporation, Skokie, Ill.

Filed Aug. 14, 1973, Ser. No. 388,296
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 AD **15 Claims**



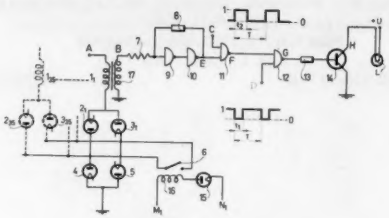
An apparatus for providing a visual display of encoded information on a cathode-ray tube screen wherein the information is stored in a memory which has a storage capacity greater than the display capacity of the tube screen. The address to the memory is decoded and in response to the writing of a preselected character row from the memory, and a selected scan line and scan line position, an indicia or marker signal is generated. Generation of the indicia signal occurs at a scan position adjacent the normal display area of the display screen. The signal serves to control the beam intensity of the cathode-ray tube so as to create a visual marker on the screen indicating the segment of the memory being displayed.

3,827,042

ILLUMINATED DISPLAY DEVICE PROVIDING CONTINUOUS LIGHT GRADATION

Jozsef Mandzsu; Laszlo Jagicza; Attila Peter; Laszlo Kellner, and Sandor Jodal, all of Budapest, Hungary, assignors to Fok-Gyem Finommechanikai es Elektronikus Muszergyarts Sz., Budapest, Hungary

Filed Feb. 5, 1973, Ser. No. 329,316
Claims priority, application Hungary, Feb. 4, 1972, FO 643
Int. Cl. G09f *9/34*
U.S. Cl. 340—335 **7 Claims**



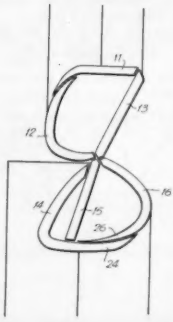
An illuminated information and advertising device provides continuous light gradation, in white or colored lights. The incandescent lamps are preheated in an electronically controllable manner independently of the information indication. During the course of the indication of information, the brightness of the incandescent lamp can be varied continuously with electronic means in accordance with a given program. The storage and switching elements of the illuminated board can also be controlled by means of bipolar signals and are also provided with separately controllable inputs for varying the light gradation and/or for the preheating. This controllability ensures the compatability of the electronic control circuit of the illuminated board with the electronic control circuit of the color contrast devices, which are equipped with magnetic indicating elements; thus, it is possible to operate, in conjunction with an outdoor lighted board, easily readable color contrast devices disposed indoors, by means of which complete control can be exercised.

3,827,043

DISPLAY DEVICE FOR NUMERIC CHARACTERS

Shuji Maezawa, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Dec. 6, 1972, Ser. No. 312,462
Claims priority, application Japan, Dec. 8, 1971, 46-98632; Dec. 8, 1971, 46-98633
Int. Cl. G08b *5/36*
U.S. Cl. 340—336 **5 Claims**



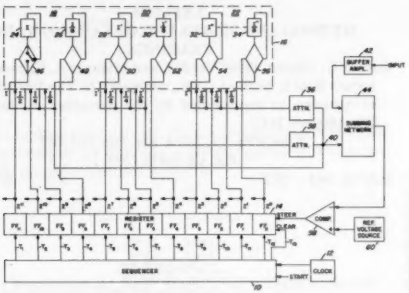
An arrangement of segments, both curved and straight, makes it possible to present in a digital display any digit from 0

to 9. The reduction from the usual 7-segment display to a 6-segment display reduces the number of leads and the circuitry required for a digital display device. The arrangement is particularly suitable for use with liquid crystal display devices, and light-emitting diode devices.

3,827,044
ANALOG TO DIGITAL CONVERTER

Philip A. Toney, Maitland, Fla., and John O. Bowers, Jr., San Jose, Calif., assignors to General Dynamics Corporation, St. Louis, Mo.

Continuation of Ser. No. 42,097, June 1, 1970, abandoned. This application Sept. 8, 1972, Ser. No. 287,391
Int. Cl. H03k *13/04*
U.S. Cl. 340—347 AD **1 Claim**



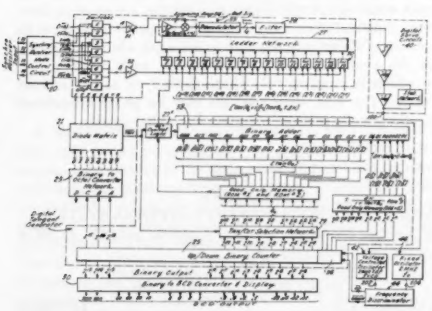
A high speed analog to digital converter using separate weighted current sources for each digit and a null seeking comparator is disclosed. The input analog voltage is compared successively with different sums of currents developed by the current sources.

Other features include a fast-slewing input buffer amplifier with rapid response to transient loads, and extremely good regulation in the weighted current sources to keep the current constant notwithstanding temperature and load variations.

3,827,045
ANGLE DIGITAL CONVERTER SYSTEM

Dusan K. Markus, 11 E. Magna Vista St., Arcadia, Calif. 91006

Filed Dec. 18, 1972, Ser. No. 315,946
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **11 Claims**

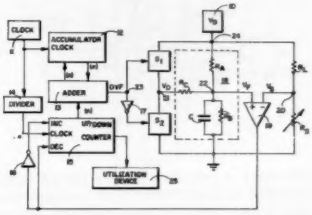


An improved system is provided for converting synchro or resolver shaft analog input data into corresponding digital outputs. The system effectuates the conversion by means of a null type circuit which includes a ladder network under the control of up/down counters and read-only memories, the latter being addressed by the counters and serving as a tangent function generator.

3,827,046
FILTERED DUTY CYCLE FEEDBACK ANALOG TO DIGITAL CONVERTER

George A. Watson, Tustin, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Apr. 25, 1973, Ser. No. 354,297
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 AD **5 Claims**

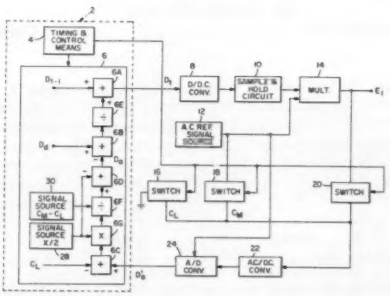


A filtered duty cycle analog to digital converter is provided which includes at least one electrical sensor for producing a signal which varies as an analog representative of a specific parameter. The analog signal is converted to a digital signal. The analog signal and a signal representative of the digital signal are compared whereby the digital signal may be corrected to reflect changes in the analog signal as caused by changes at the electrical sensor.

3,827,047
SELF CALIBRATING DIGITAL TO A.C. CONVERTER FOR MULTIPLE CONVERSION

Henry R. Kasakowski, Denville, and Douglas J. Washburn, Morristown, both of N.J., assignors to The Bendix Corporation, Teterboro, N.J.

Filed Oct. 3, 1973, Ser. No. 403,246
Int. Cl. H03k *13/02*
U.S. Cl. 340—347 DA **8 Claims**



Apparatus for performing multiple digital to a.c. conversions by using a self calibrating feedback loop. The conversions are performed accurately and without the need for a multiplicity of precision components.

3,827,048

ALPHA-NUMERIC CHARACTER DISPLAY DEVICE AND METHOD, WHOSE CHARACTERS ARE FORMED OF LIGHT EMITTING DIODES

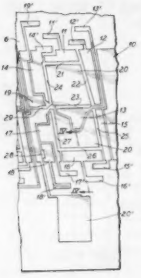
Setsuo Usui, Kanagawa-ken, Japan, assignor to Sony Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 320,720, Jan. 3, 1973. This application July 31, 1973, Ser. No. 384,232

Claims priority, application Japan, Aug. 10, 1972, 47-80110

Int. Cl. G08b *5/00*

U.S. Cl. 340—366 R **12 Claims**



An alpha-numeric character display device and method of making the same. The alpha-numeric characters are formed of a plurality of light emitting diodes mounted on a transparent base plate with their respective P-N junctions lying in planes perpendicular to the base plate and arranged in a pattern to exhibit selectively a plurality of individual display units. Energization selectively of different diodes is accomplished through a novel conductive lead pattern laid down in layers above and over the surface of the base plate, the conductive leads being separated from each other by a novel insulating arrangement which is produced in a novel manner.

3,827,049

RADAR SYSTEM FOR TRACKING TARGETS FLYING AT LOW ALTITUDE

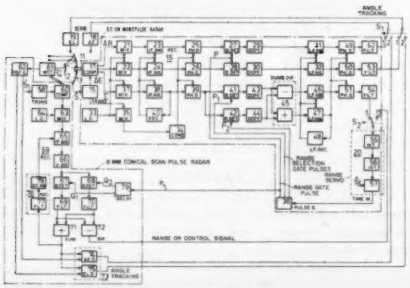
Cornelis Augustinus van Staaden; Maximiliaan Hubert Bodmer; Herman Michel van Hijfte, and Bernard Gellekink, all of Hengelo, Netherlands, assignors to N. V. Hollandse Signaalapparaten, Hengelo, Netherlands

Filed Dec. 21, 1972, Ser. No. 317,217

Claims priority, application Switzerland, Dec. 23, 1971, 018862/71

Int. Cl. G01s *9/16, 9/22*

U.S. Cl. 343—7.3 **4 Claims**



A radar system is provided with a first radar apparatus for the range and angle tracking of targets located at a relatively long range and with a second radar apparatus for at least the angle tracking of targets at a relatively short range. The radar apparatus both operate at an own wavelength, but they employ one and the same tracking antenna. The wavelength of the second radar apparatus is so selected that, in case a target being tracked at a relatively low altitude is within the range of said second radar apparatus, the interference caused by the receipt of target echoes reflected by the earth surface does not influence the antenna tracking movement. When a target being tracked is outside the range of the second radar apparatus, it is tracked by the first radar apparatus in range and in angle coordinates. When said target arrives within the range of the second radar apparatus, it can be tracked in angle coordinates by the latter radar apparatus and in range by the former radar apparatus.

3,827,050

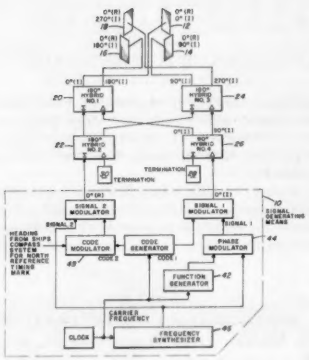
METHOD AND MEANS FOR OBTAINING RADIO BEARINGS

Burton G. Glazer, Palos Verdes, and Michael A. Bittner, Manhatian Beach, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 15, 1973, Ser. No. 332,967

Int. Cl. G01s *1/08*

U.S. Cl. 343—102 **8 Claims**



A method for generating D.F. signals having the characteristic that their phase difference is proportional to the azimuth with respect to the radiating source. An array of four, vertical, dipole elements equiangularly spaced with respect to the center of the array is fed with a sine wave which is in phase at all the elements and, simultaneously, with another sine wave which is progressively phase-shifted, in order, around the array. The sine wave carriers may be phase-modulated with orthogonally related, pseudonoise-coded signals.

3,827,051

ADJUSTABLE POLARIZATION ANTENNA SYSTEM

Peter Foldes, Montreal, Quebec, Canada, assignor to RCA Corporation, New York, N.Y.

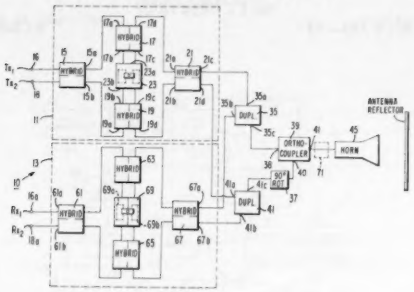
Filed Feb. 5, 1973, Ser. No. 329,620

Int. Cl. H04i *5/00;* **H01q** *3/26*

U.S. Cl. 343—176 **11 Claims**

An adjustable polarization system is provided by the combination of an adjustable power divider and an orthogonal coupler. One terminal of the power divider is coupled to one terminal of the orthogonal coupler through a 90° polarization

rotator, the second terminal of the power divider being coupled to a second terminal of the orthogonal coupler. By an adjustment in the power divider, the percentage of power to the input terminals of the orthogonal coupler are altered and consequently the polarization is adjusted.



3,827,052

SIMULTANEOUS RADIO COMMUNICATION SYSTEM BETWEEN TWO STATIONS

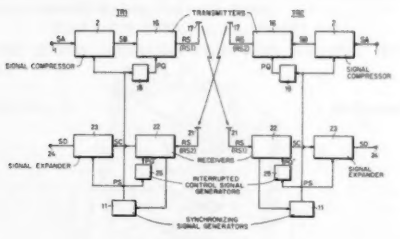
Saburo Tanaka, Izumi, Japan, assignor to Sendai Television Broadcasting Corporation, Miyagi-ken, Japan

Filed Dec. 6, 1972, Ser. No. 312,778

Claims priority, application Japan, Dec. 8, 1971, 46-99646; Apr. 8, 1972, 47-38982

Int. Cl. H04l 5/22

U.S. Cl. 343—178 **1 Claim**



A simultaneous radio communication system comprising first and second radio stations adapted to transmit first and second radio waves of the same radio channel and receive the transmitted second and first radio waves, in which the first and second radio waves are interrupted waves interrupted in opposite phases at the same period; the on-state periods of the transmitted first radio waves include time compressed third information of first information to be transmitted; the on-state periods of the transmitted second radio waves include time compressed fourth information of second information to be transmitted; and the first and second radio stations have means for time expansion of the time compressed fourth and third information from the second and first transmitted radio waves to obtain sixth and fifth information corresponding to the second and first information respectively.

3,827,053

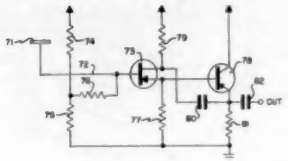
ANTENNA WITH LARGE CAPACITIVE TERMINATION AND LOW NOISE INPUT CIRCUIT

Edward N. Willie, 10 Fox Ln., Locus Valley, N.Y. 11560, and Walter K. Volkers, deceased, late of Carlton Bay Gardens, Carlton Ave., Port Washington, N.Y. (by Daphne J. Volkers, executor)

Continuation-in-part of Ser. No. 64,054, July 23, 1970, abandoned, which is a continuation-in-part of Ser. No. 644,768, June 7, 1967, abandoned. This application Feb. 28, 1972, Ser. No. 229,992

Int. Cl. H01q 1/26; H04b 1/10

U.S. Cl. 343—701 **4 Claims**



An antenna having a short stem and a larger than normal capacitive termination to provide improved performance over antennas of the same effective electrical length, and an input circuit having a larger than normal total input resistance for obtaining improved signal-to-noise ratios by using the capacitive reactance of said antenna as a noise sink.

3,827,054

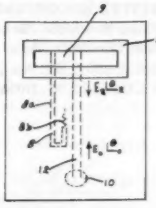
REENTRY VEHICLE STRIPLINE SLOT ANTENNA

Richard E. Herskind, Burlington, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed July 24, 1973, Ser. No. 382,252

Int. Cl. H01q 13/10

U.S. Cl. 343—708 **3 Claims**



A reentry vehicle antenna which is comprised of a stripline slot antenna with the antenna element including a stripline circuit board with a radiating aperture fed by a conventional strip transmission line. A feedback circuit is provided to control the input impedance of the antenna while operating into an RF transparent window as the window depth varies due to erosion upon reentry.

3,827,055

LENS FED ANTENNA ARRAY SYSTEM

Bruce Fredric Bogner, Mt. Holly, and David Francis Bowman, Moorestown, both of N.J., assignors to RCA Corporation, New York, N.Y.

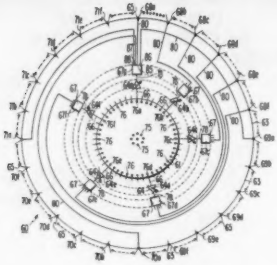
Filed Apr. 23, 1973, Ser. No. 353,423

Int. Cl. H01q 19/06

U.S. Cl. 343—754 **10 Claims**

A circular phased array system is described which utilizes a lens feed to simplify the problem of commutating the RF dis-

tribution system through 360° of steering of the antenna beam. The lens feed consists of a circular parallel-plate radial transmission line with a central set of probes and a ring of peripheral probes. The peripheral probes are coupled via switches to an array of radiating elements arranged in a circle. The central set of probes can be energized and phased to produce electromagnetic energy with an amplitude distribu-

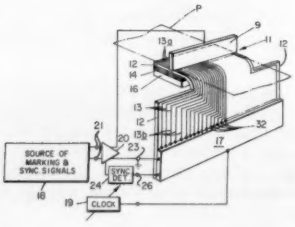


tion within the parallel-plate line in any given direction. By selective settings of phase and amplitude of the energy coupled to the central set of probes to achieve the proper energy distribution to the peripheral probes and by operating the switches to determine which radiating elements are coupled to the peripheral probes, a desired directive antenna pattern with low side lobes is provided.

ERRATUM

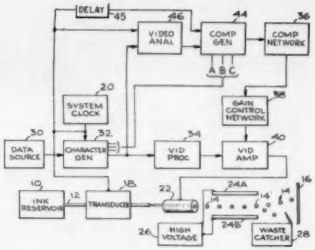
For Class 346—74 see:
Patent No. 3,826,915

3,827,056
GRAPHIC ELECTRIC RECORDER SCANNING DEVICE WITH PRINTED RECORDING STRIPS
Gerald Lawrence Vano, Brockton, Mass., assignor to Alden Research Foundation, Westboro, Mass.
Filed Oct. 4, 1972, Ser. No. 294,814
Int. Cl. G01d *15/06;* **H05k** *3/20*
U.S. Cl. 346—74 E **17 Claims**



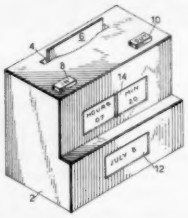
For use in a facsimile recorder with a linear marking electrode blade for marking on a recording web, an array of flexible parallel conductive strips is carried on a flexible insulating sheet backed by a foam rubber body which yieldingly presses the strips against the paper and the paper against the blade with uniform pressure. A solid state integrated circuit commutator, physically co-extensive with terminal portions of the conductive strips, distributes graphic signals to the strips.

3,827,057
SELECTIVE CHARGING MAGNITUDE COMPENSATION
Vincent E. Bischoff, River Grove, and Robert I. Keur, Niles, both of Ill., assignors to A. B. Dick Company, Chicago, Ill.
Filed Jan. 2, 1973, Ser. No. 320,325
Int. Cl. G01d *18/00*
U.S. Cl. 346—75 **8 Claims**



In an ink drop printer, the charge on a just formed drop is stored and used to provide a compensating charge for the next drop, to be formed in order to avoid the adverse effects of the charge on the just formed drop.

3,827,058
PUNCH-CARD TIME RECORDING DEVICE
Adrian Brener, 28/3, Tora Ve'Avoda St., Ramat-Eliahu, Israel
Filed July 5, 1972, Ser. No. 269,249
Claims priority, application Israel, July 9, 1971, 37278
Int. Cl. G01d *15/04*
U.S. Cl. 346—86 **7 Claims**



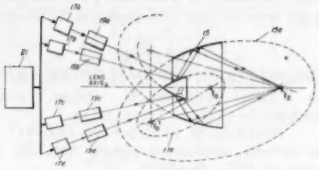
A punch-card time recording device comprises a housing having an opening for receiving an employee's time punch-card, a plurality of punches disposed within the housing controlled by a timing device for recording the time on the punch-card, and a stop within the housing determining the position of the punch-card with respect to the punches. The device further includes a first operating element actuated by the employee to record his "in" time and controlling the stop to position a first field of the punch-card with respect to said punches, and a second operating element actuated by the employee to record his "out" time and controlling the stop to position a second field of the punch-card with respect to the punches.

3,827,059

CATOPTRIC LENS ARRANGEMENT

Werner R. Rambauske, Carlisle, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed July 3, 1972, Ser. No. 268,272
Int. Cl. G02b 5/10
U.S. Cl. 350—294 9 Claims



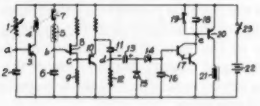
Catoptric lens arrangements for combining energy from a number of sources, as light energy from a number of lasers, are shown. The disclosed arrangements include mirrors with reflecting surfaces having focal points spaced from a common axis of symmetry. With such reflecting surfaces (generated by nutating selected quadratic sections about the axis of symmetry), energy from a number of lasers may be focused at a focal point of the reflecting surface of an exit mirror.

3,827,060

AUTOMATIC CAMERA SHUTTER CONTROLS UTILIZING PHOTOELECTRICALLY CONVERTED PULSES

Tsukumo Nobusawa, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Feb. 8, 1973, Ser. No. 330,622
Claims priority, application Japan, Feb. 10, 1972, 47-013963
Int. Cl. G03b 7/08
U.S. Cl. 354—51 10 Claims



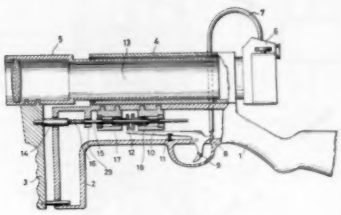
An electrical system for controlling a camera shutter. The electrical system includes a memory capacitor for storing a voltage and an oscillator connected to the capacitor for transmitting pulses thereto to form the voltage stored thereby. The oscillator is operated in accordance with factors such as brightness at the object to be photographed, film speed, and diaphragm setting, so that the voltage stored by the memory capacitor will correspond to these factors. A circuit which is electrically connected to a camera shutter to determine the duration during which it remains open is electrically connected with the memory capacitor to be controlled thereby.

3,827,061

FOCUSING LENS LOCK FOR PHOTOGRAPHIC CAMERAS

Ferdinand Kellner, 8941 Hart 14, near Memmingen, Germany

Filed June 20, 1973, Ser. No. 371,690
Claims priority, application Germany, July 25, 1972, 2236344
Int. Cl. G03b 3/02
U.S. Cl. 354—195 7 Claims



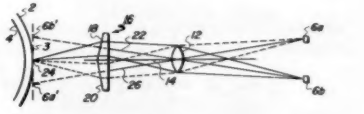
In a photographic apparatus with manually-operable means for rapid focusing of the objective lens, the invention has been devised to provide for automatic retention of the correctly-set objective in response to the operation of the shutter trip of the camera. In a preferred form, actuation of the shutter trip also operates locking means acting on an element movable with the objective.

3,827,062

OPTICAL ARRANGEMENT FOR HIGH SPEED PRINTOUT SYSTEM

Louis D. Mailloux, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 18, 1972, Ser. No. 316,187
Int. Cl. B41b 21/24
U.S. Cl. 95—4.5 R 4 Claims



A printing system including a photoconductive surface having a charge placed over an area of the surface. An optical means for selectively discharging portions of that area is employed to form a charge and discharge portion representative of an electrostatic latent image. The optical means includes an array of light emitting solid state devices with appropriate logic circuitry for selectively energizing certain elements of the array in order to form the electrostatic latent image.

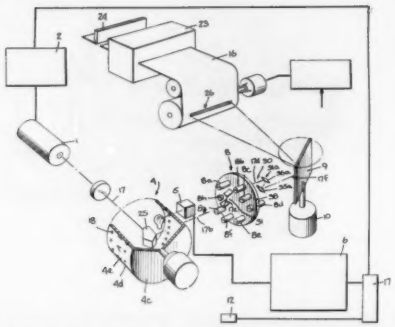
In order to position the light images in a line and more closely together than their respective sources, the light emitting sources are placed in two parallel linear arrays. The images of each linear array are combined by projection through a bi-prism to effect a single linear array of closely packed light images.

3,827,063

MULTILENS PHOTOCOMPOSING MECHANISM

David J. Sinnott, Ringwood, and Donald E. Alecci, Pine Brook, both of N.J., assignors to Star-New Era, Inc., South Hackensack, N.J.

Filed July 5, 1972, Ser. No. 269,194
Int. Cl. B41b 21/26
U.S. Cl. 95—4.5 R 42 Claims



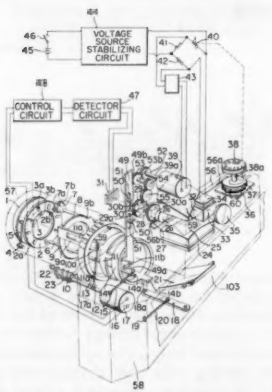
The use of a plurality of lenses projecting a character to permit different magnifications thereof. The lenses are stationary and there is a movable reflector mechanism that directs the images of the character through any selected lens of the system.

3,827,064

FOCUS DETECTOR DEVICE

Takehiko Kiyohara, Zama, and Noritaka Mochizuki, Kamakura, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 22, 1973, Ser. No. 325,813
Claims priority, application Japan, Jan. 26, 1972, 47-9677
Int. Cl. G03b 3/00
U.S. Cl. 354—25 3 Claims



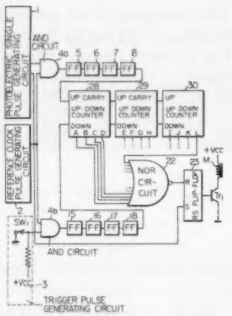
This specification discloses a focus detector device which utilizes the fact that when a target image is formed in focus on the surface of a photoelectric element such as CdS cell or the like through an objective lens the resistance of the photoelectric element is maximum and when the formed image is out of focus the resistance of the photoelectric element is decreased. At least one focusing light-receiving element is disposed in the optical path provided by the objective lens with a focusing lens interposed between the element and the objective lens. Means for limiting a light beam passed from the target or object of the photoelectric element is provided to control the amount of light so as to cause a predetermined brightness of the object light to be received by the photoelectric element. A second photoelectric element is provided to control the diaphragm of the objective lens and a second auxiliary diaphragm in front of the focusing phtotelectric element. The photoelectric element may be located either substantially conjugately with or forwardly and rearwardly of a secondary real image plane provided by the objective lens with respect to the focusing lens.

3,827,065

WARNING CIRCUIT OF AN ELECTRIC SHUTTER

Yasuhiro Wada, Fujimimachi, Japan, assignor to Kabushikikaisha COPAL, Tokyo, Japan

Filed Aug. 28, 1972, Ser. No. 284,151
Claims priority, application Japan, Aug. 30, 1971, 46-66478; Aug. 30, 1971, 46-66479
Int. Cl. G03b 7/08
U.S. Cl. 95—10 CT 12 Claims



Warning circuit of an electric shutter for indicating the conditions of over exposure, wavering of camera resulting from too long exposure time, proper exposure range and overflow of the counter. The electric shutter comprises a photoelectric single pulse generating circuit for generating a pulse indicative of exposure time, a reference clock pulse generating circuit and a logic circuit including a pair of binary counters or an up-down counter assembly having a plurality of stages of the counter units for counting the reference clock pulses during the photoelectric single pulse being generated so as to digitally control the exposure time. The warning circuit comprises a pilot lamp means including a flip-flop circuit and a transistor operated thereby for energizing or disenergizing the lamp. The set input of the flip-flop circuit is supplied from the output of a selected stage of the counter units for counting the pulses corresponding to the time of over exposure, proper exposure range, wavering of camera and overflow of the counter so that the flip-flop circuit is actuated by the selected stage to indicate the required condition.

3,827,066

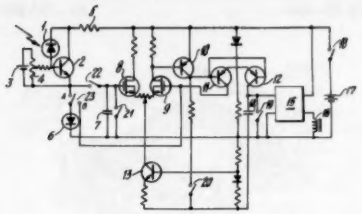
MEMORY TYPE EXPOSURE CONTROL SYSTEM

Takeshi Yanagisawa, Kanagawa-ken; Kinzi Tanikoshi, and Yusuke Ono, both of Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 44,670, June 9, 1970, Pat. No. 3,750,540.
This application June 5, 1973, Ser. No. 367,219
Claims priority, application Japan, June 13, 1969, 44-46555
Int. Cl. G03b 7/08
U.S. Cl. 354—51 5 Claims

A memory type exposure control system for controlling the shutter speed of a camera wherein an electrical change of a

photovoltaic element on which the light from a scene being photographed impinges through the photographic objective of the camera is amplified by an amplifier circuit and is memorized by a memory condenser in the form of a voltage, and the memorized voltage is applied to a field effect transistor of which the output resistance effected thereby is



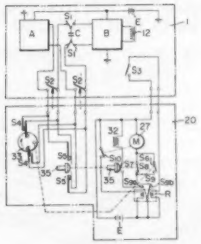
combined with another condenser to constitute a shutter speed controlling-RC timing circuit whereby the delay time determines the duration of shutter control pulse, an improvement being effected in the sensor circuit so that the memory type exposure control system is made sufficiently responsive to a wider range of incident light intensity than was ever possible.

3,827,067

AUTOMATIC WIND-UP DEVICE FOR A CAMERA HAVING A MEMORY TYPE EXPOSURE CONTROL DEVICE

Masayoshi Yamamichi, Sagamihara, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed July 5, 1973, Ser. No. 376,828
Claims priority, application Japan, July 5, 1972, 47-67402
Int. Cl. G03b *7/08*
U.S. Cl. 354—51 **4 Claims**



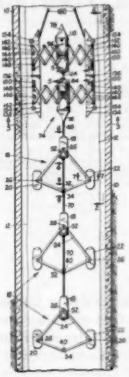
An automatic wind-up device for a camera having a memory type exposure control device which allows change over between continuous photographing and single frame photographing, wherein when changed over to continuous photographing the photometrically sensed value of a first one frame is memorized and subsequent photographing is done based on said memorized value, thus a series of photographing is done while when changed over to single frame photographing, photometrically sensed value is memorized for each frame photographed for conducting photographing.

3,827,068

APPARATUS FOR PHOTOGRAPHING PIPELINE INTERIORS

Thomas Burton Hill, Jr., and Arthur Legrand Pendrey, both of Salem, Oreg., assignors to Salem Sand and Gravel Company, Salem, Oreg.

Filed Dec. 11, 1972, Ser. No. 313,802
Int. Cl. G03b *17/08*
U.S. Cl. 95—11 UW **17 Claims**



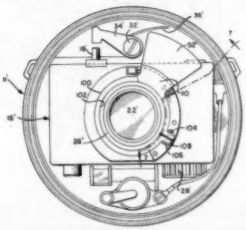
One or more laterally adjustable light support float units each is retractable for passage through a sewer manhole and is expandable to the interior transverse dimension of the pipeline, and supports a light for illuminating interior areas of the pipeline to be photographed. A camera and electrical power supply support float unit also is provided, and the support units are interconnected by flexible lines for passage of the assembled apparatus through curved areas of the pipeline and for spacing the lights relative to the camera. Laterally adjustable stabilizer means is provided for the camera and power supply support float unit. In one embodiment this stabilizer means comprises a pair of laterally and longitudinally collapsible outboard floats. In another embodiment the stabilizer means comprises a pair of laterally adjustable guide wheels extending from opposite sides of the float unit. Operation of the camera is radio controlled from a remote position outside the pipeline sequentially during progress of the apparatus through the pipeline.

3,827,069

FOCUSING MECHANISM FOR UNDERWATER CAMERA

Harold Lindsley Stowell, 666 Eleventh St. N.W., Washington, D.C. 20001

Filed Mar. 1, 1973, Ser. No. 337,166
Int. Cl. G03b *17/08*
U.S. Cl. 95—11 AW **6 Claims**



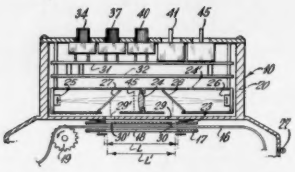
Apparatus for varying the focus of a lens system of a camera mounted in a sealed underwater housing is provided requiring

no physical connection between the interior and the exterior of the sealed housing.

3,827,070
DIGITAL DATA IMAGING SYSTEM

Peter G. Hoerenz, Hartsdale, and Helmut Ludi, Eastchester, both of N.Y., assignors to Carl Zeiss-Stiftung d.b.a. Carl Zeiss, Oberkochen/Wuerttemberg, Germany

Filed Aug. 1, 9173, Ser. No. 384,760
Int. Cl. G03b *17/24*
U.S. Cl. 354—105 **14 Claims**

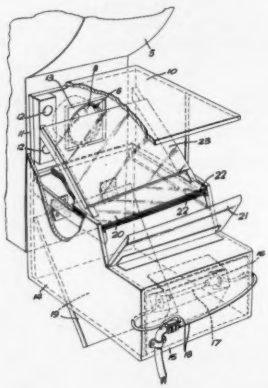


The invention contemplates a camera-back construction, particularly for a roll-film camera, whereby digital data applicable to each exposed frame is automatically entered via the back side of the film along opposite longitudinal end margins of each frame. Separate multiple-digit banks of light-emitting diodes jointly utilize a single optical system for projecting their respective displays at the end margins of each frame.

3,827,071
CAMERAS

Gerald Leslie Turpin, Knoll Cottage, Fulmer Rd., Fulmer, England

Filed June 20, 1972, Ser. No. 264,586
Claims priority, application Great Britain, June 24, 1971, 29677/71
Int. Cl. G03b *27/76*
U.S. Cl. 95—1 R **10 Claims**

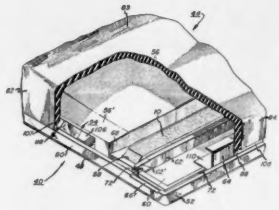


The drawings show a camera having a device for directing additional light of a selected colour and intensity directly into the camera aperture to modify a scene recorded on film in the camera.

3,827,072
CASSETTE

Paul A. Bevis, Pasadena; Hazen L. Hoyt, III, Glendora; Thomas E. Miner, Pasadena, all of Calif., and Norbert T. Kuypers, Lake Orion, Mich., assignors to Xerox Corporation, Rochester, N.Y.

Continuation of Ser. No. 874,747, Nov. 7, 1969. This application Dec. 16, 1971, Ser. No. 208,973
Int. Cl. G03b *17/26*
U.S. Cl. 95—66 **27 Claims**

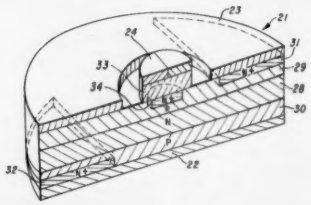


This application relates to a cassette adapted for use in an automated, flat plate xerographic processing system, especially of the type wherein X-ray images are recorded. The cassette includes means to rigidly support a xerographic plate therein and means adapted for cooperation with external plate advancing means for the insertion and withdrawal of a xerographic plate. Upon closing of the cassette by one of the associated processing units and upon the withdrawal of the plate-bearing cassette therefrom, the xerographic plate therein is maintained in a light-tight environment. After imaging exposure to X-rays which readily pass through the cassette walls, the cassette is inserted into another automated processing unit which automatically opens the cassette and removes the plate, supported by the cassette in proper alignment, therefrom.

3,827,073
GATED BILATERAL SWITCHING SEMICONDUCTOR DEVICE

Jack P. Mize, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 870,772, May 1, 1969, abandoned. This application Sept. 7, 1971, Ser. No. 178,438
Int. Cl. H01l *11/00, 15/00*
U.S. Cl. 357—39 **3 Claims**

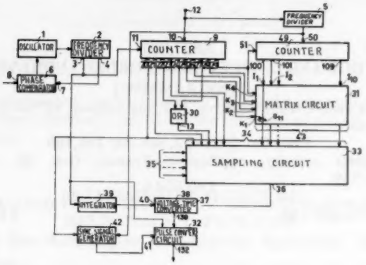


There is disclosed herein a self-triggering switching device which may be either symmetrical or non-symmetrical. The device comprises a plurality of interleaved layers of semiconductor materials of opposite conductivity types forming a plurality of p-n junctions. Two main current-carrying electrodes are affixed to the external layers and a trigger electrode including a layer of active glass is affixed to one of the intermediate layers providing controlled "turn-on" of the device.

3,827,074
TRANSMISSION DEVICE FOR MULTIPLEX TRANSMISSION BETWEEN A TELEVISION CAMERA AND ITS CONTROL UNIT

Bernard De Thieulloy, and Claude Claverie, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jan. 4, 1972, Ser. No. 215,348
Claims priority, application France, Nov. 8, 1971, 71.39926
Int. Cl. H04n *7/10, 7/12, 7/14*
U.S. Cl. 358—15 **5 Claims**

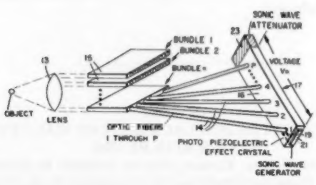


In a two-way transmission device for multiplex transmission between a camera and its control unit, the control unit combines the narrow band control signals for the camera into a time-multiplex signal having a zero direct component and a frequency band comprised between 50 kc/s and 2 mc/s, different sampling frequencies being used for the narrow-band signals according to their bandwidths. In addition to this time-multiplex signal, which is transmitted as such, i.e., not being frequency-translated, or modulated on a carrier, the control unit transmits electrical power at zero frequency and a 58 mc/s carrier modulated by a video signal intended for the camera viewefinder. The camera transmits to the control unit the three video signals which it produces, on three carriers at 9, 22 and 36 mc/s. The service informations which the control unit has to receive from the camera are transmitted by means of pulses incorporated in the video signals during horizontal blanking intervals.

3,827,075
SOLID STATE TELEVISION CAMERA

Orestes M. Baycura, 2238 Central Park Dr., Campbell, Calif. 95008

Filed July 9, 1973, Ser. No. 377,668
Int. Cl. H04n *9/04*
U.S. Cl. 358—41 **10 Claims**

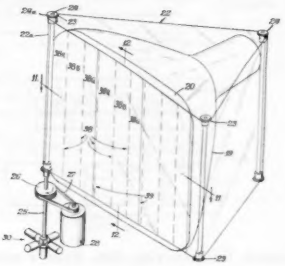


A solid state television camera wherein the light from an object is focused on a plurality of bundles of optical fibers. The optical fibers on each bundle are respectively connected to the light responsive face of a plurality of photo-piezoelectric effect transducer crystals. Each crystal is activated by sound source located at one end of the crystal. As the sound wave travels down the length of a crystal, a voltage occurs across the crystal that is proportional to the light from the particular optical fiber when the travelling sound wave is coincident with that particular optical fiber. As the sound wave travels down the crystal a plurality of electrical pulses of varying amplitude in proportion to light intensity, sequentially appear across the crystal that represent one horizontal sweep of the object. A plurality of sweeps may be successively or simultaneously taken of the object by the remaining bundles and corresponding crystals that constitute an electrical representation of the object which may be then transmitted to a distant television receiver.

3,827,076
COLOR TV APPARATUS AND METHOD

John L. McGregor, 827 S. Glenwood, Springfield, Ill. 62704

Continuation of Ser. No. 687,274, Dec. 1, 1967, abandoned.
This application Apr. 24, 1971, Ser. No. 134,030
Int. Cl. H04n *9/22*
U.S. Cl. 358/58 **21 Claims**

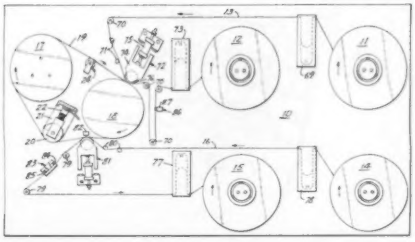


Producing a pattern of stripes of color weighted information on the TV picture screen, utilizing a color filter in front of picture screen having color bands in register with the stripes and moving the pattern of stripes and the color filter together across the picture screen to complete a sequence.

3,827,077
TWO-STAGE CONTACT DUPLICATION OF MAGNETIC SIGNALS UTILIZING A METAL-BACKED INTERMEDIATE

Gary W. Kobilka, Saint Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Feb. 20, 1973, Ser. No. 333,878
Int. Cl. G11b *5/86*
U.S. Cl. 360—16 **8 Claims**



Magnetic signals from a master magnetic recording medium are copied onto a copy magnetic recording medium by means of an intermediate transfer medium having a thermally conductive metal backing and a coating of magnetizable material of low Curie temperature and normally high H_c. The signals are copied from the master onto the intermediate by ther-

moremanent contact duplication with the intermediate being cooled by the transfer of heat through the metal backing to a refrigerated surface. Subsequently, the signals are copied from the intermediate onto the copy medium by magnetically stimulated contact duplication.

3,827,078

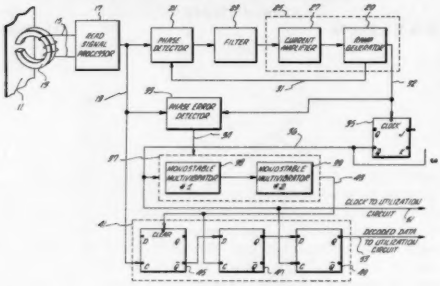
DIGITAL DATA RETRIEVAL SYSTEM WITH DYNAMIC WINDOW SKEW

Joseph John Bauer, Agoura, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Nov. 1, 1972, Ser. No. 302,914

Int. Cl. G11b *5/44*

U.S. Cl. 360—45 **2 Claims**



In a system for retrieving data from a record medium wherein the retrieved data is decoded by data window signals synchronized to data clock signals, the data window signals are skewed dynamically in response to phase error between the data clock signals and the retrieved data. A phase error detector, comprising two flip-flops and a differential amplifier, senses the phase displacement of the raw data with respect to the data clock signals, and produces a window skew signal which is supplied to the data window signal generating circuit.

3,827,079

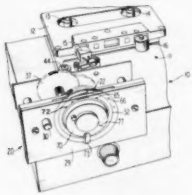
TRANSCRIBER DICTATION INDEXING APPARATUS

Fred C. Bolick, Jr., Atlanta, Ga., assignor to Lanier Electronic Laboratory, Inc., Atlanta, Ga.

Filed Oct. 8, 1971, Ser. No. 187,640

Int. Cl. G11b *23/42, 31/00*

U.S. Cl. 360—79 **16 Claims**



Apparatus providing indexing of transcribed information recorded on a recording medium. Information denoting end of dictated message, special instructions of the dictator, or other details, is recorded directly on the recording medium rather than being marked on a separate index member by the dictator. An index member not requiring predetermined beginning and end indications is traversed by transcription apparatus concurrently with a traverse of the tape or other recording medium, and a visual indication is applied to the index member corresponding to each element of information previously recorded by the dictator. When this preparation of the index member by the transcriber has been completed, a reference mark is positioned adjacent the index member mark which indicates the beginning of dictation to be transcribed; the index member then moves relative to the indicating mark as transcription progresses to indicate the transcription relative to the previously-prepared index member.

3,827,080

METHOD AND DEVICE FOR RECORDED AUDIO-VISUAL PROGRAMMING

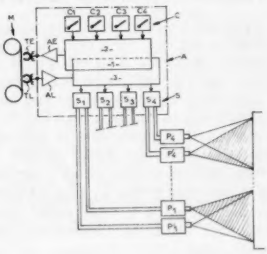
Andre Jean-Claude Gendrot, 102, rue Anatole, 92700 Drancy, France

Filed Oct. 20, 1972, Ser. No. 299,588

Claims priority, application France, Oct. 20, 1971, 71.37738

Int. Cl. G11b *23/36;* **G03b** *21/20*

U.S. Cl. 360—80 **9 Claims**



The programming of the operation of several audio-visual apparatuses such as coupled slide projectors is recorded on the same carrier as and in synchronism with said recording. This program is then operated by the device of this invention utilizing programming and/or operating circuits sharing command logic circuits. The latter include essentially a shift register and an output flip-flop triggered by recurrent pulse trains. Each pulse is assigned according to its position to a particular command and is modulated in time duration in accordance with the variations of said command. By integrating the pulses of one and the same position in successive pulse trains, the variations of the respective command concerned can be reproduced.

3,827,081

DEVICE FOR THE DISPLACEMENT OF MAGNETIC READ/WRITE HEADS

Lucien Robert Prieur, Ecouen, France, assignor to Societe Industrielle Honeywell Bull (Societe Anonyme), Paris, France

Filed June 20, 1972, Ser. No. 264,640

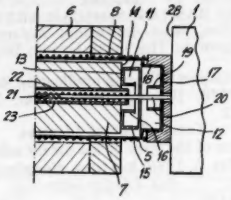
Claims priority, application France, June 24, 1971, 71.23131

Int. Cl. G11b *5/54, 21/24*

U.S. Cl. 360—105 **13 Claims**

A device is provided for the displacement of magnetic read and write heads in a disc drive unit, which device includes a sliding carriage on which the heads are mounted. The carriage is driven by an electric motor comprising a coil integral with

the carriage and located in the magnetic field of a permanent magnet consisting of a magnetic core around which the coil is



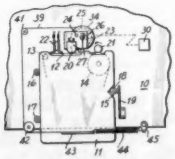
coaxially located. An air dash-pot is provided having one of its constituent elements attached to the carriage and the other to the core.

3,827,082

RECORD TRACK INDICATOR APPARATUS FOR A MULTITRACK TAPE PLAYER

Itsuki Ban, 829, Higashi Oizumimachi, Nerima-ku, Tokyo, Japan

Filed May 25, 1972, Ser. No. 256,934
Int. Cl. G11b *21/08*
U.S. Cl. 360—106 **5 Claims**



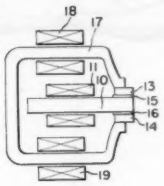
A record track indicator apparatus for a multitrack magnetic tape player comprising a rotary cam for shifting a magnetic head in alignment with record tracks on the tape across the width of the tape, a rotary member rotatable in relation to rotation of the rotary cam, a flexible string member connected to the rotary member and adapted to be taken up by the rotary member when rotated, bias means for exerting tension on the flexible string member in a direction reverse to that applied by the rotary member, and an indicator member movable by the flexible member upon rotation of the rotary member to identify the record track to be played due to its displacement. The rotary member is rotated a predetermined amount and freed from the cam and reversedly rotated to its original position under the bias of the bias means simultaneously with movably returning the indicator member to its original position.

3,827,083

MAGNETIC HEAD WHEREIN AN ERASING HEAD IS PERPENDICULAR TO A RECORD-REPRODUCE GAP

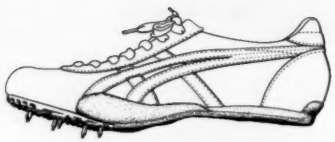
Iwao Hosaka, and Yuji Yokota, both of Chichibu, Japan, assignors to Canon Kabushiki Kaisha, Tokyo and Canon Denshi Kabushiki Kaisha, Saitama-ken, both of, Japan

Filed Aug. 30, 1972, Ser. No. 284,912
Claims priority, application Japan, Sept. 10, 1971, 46-82378[U]
Int. Cl. G11b *5/28*
U.S. Cl. 360—121 **7 Claims**

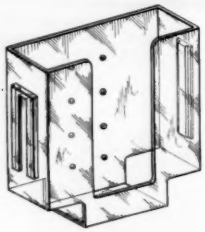


A magnetic head comprises a magnetic record or magnetic record-reproduce head core for forming a magnetized track, and an erase head core secured to the magnetic record-reproduce head core for forming erased tracks along the upper and lower marginal edges of the recorded track formed by the magnetic record or record-reproduce head core. The magnetic record or magnetic record-reproduce head core has at least one effective gap. The erase head core has its erase head gaps formed by the outer edges adjacent said effective gap portion of said magnetic record or magnetic record-reproduce head core and chip members of magnetic anisotropy opposedly disposed through said magnetic record or magnetic record-reproduce core.

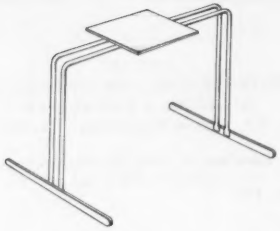
232,200
SPORT SHOE
Masanobu Inohara, Akashi, Hyogo Prefecture, Japan, assignor to Onitsuka Co., Ltd., Kobe, Japan
Filed July 27, 1973, Ser. No. 383,344
Claims priority, application Japan Mar. 6, 1973; Mar. 26, 1973; May 8, 1973
Term of patent 14 years
Int. Cl. D2—*04*
U.S. Cl. D2—311



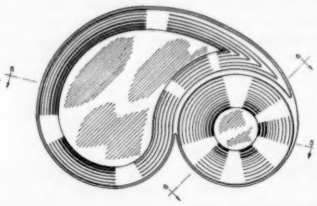
232,201
MAGAZINE RACK
Morton Hoffman, West Hempstead, N Y., assignor to Select Magazines, Inc., New York, N.Y.
Filed Oct. 2, 1972, Ser. No. 294,234
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—114



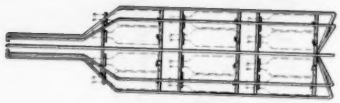
232,202
SEAT BASE OR SIMILAR ARTICLE
Hugh C. Acton, Ross Township, Kalamazoo County, Mich., assignor to The Vecta Group, Inc., Kalamazoo, Mich.
Continuation-in-part of design application Ser. No. 23,048, May 18, 1970. This application Mar. 27, 1972, Ser. No. 238,721
Term of patent 14 years
The portion of the term of the patent subsequent to Oct. 3, 1986, has been disclaimed
Int. Cl. D6—*06*
U.S. Cl. D6—196



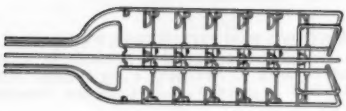
232,203
SERVING DISH
Margaret W. Montgomery, 11046 Harney St., Omaha, Nebr. 68154
Filed Dec. 20, 1972, Ser. No. 317,084
Term of patent 14 years
Int. Cl. D7—*01*
U.S. Cl. D7—1



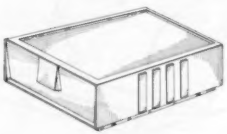
232,204
BOTTLE RACK
Samuel S. Kaner, Tokyo, Japan, assignor to Premium Sales Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 13, 1971, Ser. No. 180,244
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—153



232,205
BOTTLE RACK
Samuel S. Kaner, Tokyo, Japan, assignor to Premium Sales Kabushiki Kaisha, Tokyo, Japan
Filed Sept. 13, 1971, Ser. No. 180,243
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—153



232,206
MEDICATION CABINET
David B. Geddis, Somerville, N.J., assignor to Johnson & Johnson
Filed Aug. 19, 1971, Ser. No. 173,343
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—158



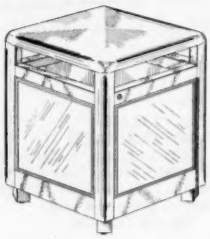
232,207
STRAND OF BEADS FOR A CURTAIN ELEMENT OR THE LIKE
Irving Levine, 23555 Park Belmonte, Calabasas Park, Calif. 91302
Filed Nov. 10, 1972, Ser. No. 305,605
Term of patent 14 years
Int. Cl. D6—*10*
U.S. Cl. D6—205

232,208
PACKAGING TRAY
John T. Armbruster, Niagara Falls, and Russell J. Wolfe, Grand Island, N.Y., assignors to American Optical Corporation, Southbridge, Mass.
Filed May 11, 1972, Ser. No. 252,534
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—242

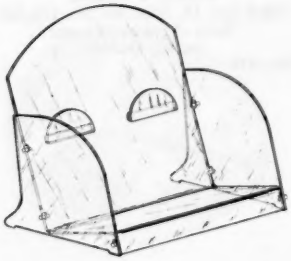
232,209
COMBINED HOLDER AND POURER FOR A WINE BOTTLE OR THE LIKE
William A. Edwards, Los Angeles, Calif., assignor to Elmar Manufacturing Company, Chatsworth, Calif.
Filed June 8, 1973, Ser. No. 368,245
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—70

232,210
TOASTER
Harry Hentschel, Munich, Germany, assignor to Siemens-Electrogerate GmbH, Berlin and Munich, Germany
Filed Apr. 28, 1972, Ser. No. 248,786
Claims priority, application Germany Oct. 29, 1971
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—93

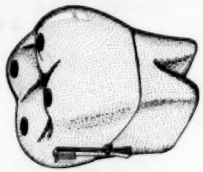
232,211
COMBINATION LITTER CONTAINER AND ADVERTISING DISPLAY DEVICE
Walter Kay, 815 S. 18th St., Arlington, Va. 22202, and Raymond M. Poelvoorde, Birmingham, Mich.; said Poelvoorde assignor to said Kay
Continuation-in-part of design application Ser. No. 226,383, Feb. 14, 1972, now Patent No. 229,279, dated Nov. 20, 1973. This application Dec. 8, 1972, Ser. No. 313,350
Term of patent 14 years
Int. Cl. D20—*99*
U.S. Cl. D7—191



232,212
DISPLAY STAND FOR CIGARETTE PACKAGES
William H. Glover, Locust, George E. Schmidt, Jr., Highlands, and Kenneth J. Donnelly, Long Branch, N.J., assignors to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed July 25, 1972, Ser. No. 274,947
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—181



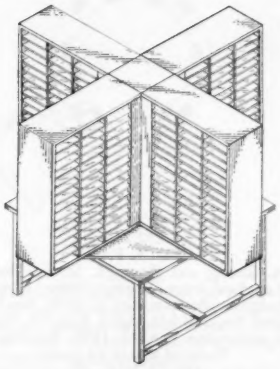
232,213
TOOTHBRUSH HOLDER, TIMER OR SIMILAR DEVICE
Richard W. Dobyns, 1351 Graymill Drive, Scotch Plains, N.J. 07076
Filed July 9, 1973, Ser. No. 377,423
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—94



232,214
DISPOSABLE LITTER CONTAINER OR SIMILAR ARTICLE
Sidney Biderman, 5524 E. Utah Place, Denver, Colo. 80222
Filed July 3, 1972, Ser. No. 268,700
Term of patent 14 years
Int. Cl. D7—*07*
U.S. Cl. D7—193

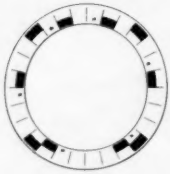
232,215
LOUNGE CHAIR
Thomas Lamb, 349 Wellesley St. E., Toronto, Ontario, Canada
Filed Dec. 8, 1972, Ser. No. 313,587
Term of patent 14 years
Int. Cl. D6—*01*
U.S. Cl. D6—56

232,216
FILING CABINET
Alan Dale Milner, 1150 S. Virain, Denver, Colo. 80219
Filed Apr. 13, 1970, Ser. No. 22,418
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—190

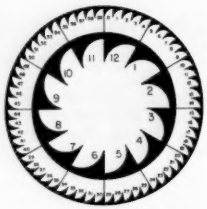


232,217
TEMPERATURE REGULATOR
Roger W. Dankert, Tustin, and William R. Dankert, Garden Grove, Calif., assignors to Rodan Industries, Inc., Anaheim, Calif.
Filed Dec. 13, 1971, Ser. No. 207,729
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D10—50

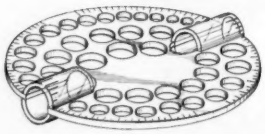
232,218
CALENDAR RING FOR A WRISTWATCH
Sadao Fujinami, Hatogaya, Japan, assignor to Orient Tokei Kabushiki Kaisha (also trading as Orient Watch Co., Ltd.), Tokyo, Japan
Filed Feb. 29, 1972, Ser. No. 230,550
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—122



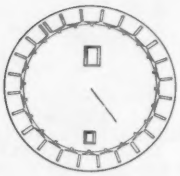
232,219
CLOCK FACE
Richard A. Strong and Rosa M. Strong, both of 6816 Longford Drive, Dayton, Ohio 45424
Original design application Nov. 5, 1970, Ser. No. 25,841, now Patent No. 224,033, dated June 27, 1972. Divided and this application Feb. 22, 1972, Ser. No. 228,483
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—126



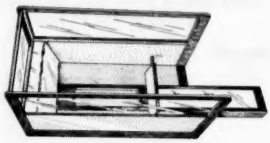
232,220
BOWLING BALL FINGER HOLE SIZING AND POSITIONING GUIDE
Wilson G. Taylor, 2901 West Valley, Alhambra, Calif. 91803
Filed Oct. 3, 1972, Ser. No. 294,644
Term of patent 7 years
Int. Cl. D10—*04*
U.S. Cl. D10—70



232,221
COMBINED DIAL PLATE AND RING FOR A TIMEPIECE FACE
Sadao Fujinami, Hatogaya, Japan, assignor to Orient Tokei Kabushiki Kaisha (also trading as Orient Watch Co., Ltd.), Tokyo, Japan
Filed Feb. 29, 1972, Ser. No. 230,551
Term of patent 14 years
Int. Cl. D10—*07*
U.S. Cl. D10—123

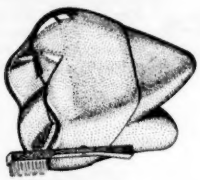


232,222
COMBINED PUBLIC TELEPHONE ENCLOSURE AND SUPPORT
Keith David Bartley and Fred Arlington Dewhirst, Indianapolis, Ind., Donald Michael Genaro, Haworth, N.J., and John Niel McGarvey, Drexel Hill, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Original design application June 5, 1972, Ser. No. 260,064. Divided and this application Aug. 20, 1973, Ser. No. 390,108
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D13—1 L



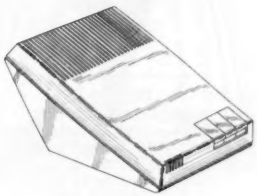
232,223
COMBINED PUBLIC TELEPHONE ENCLOSURE AND SUPPORT
Keith David Bartley and Fred Arlington Dewhirst, Indianapolis, Ind., Donald Michael Genaro, Haworth, N.J., and John Niel McGarvey, Drexel Hill, Pa., assignors to Bell Telephone Laboratories, Incorporated, Murray Hill, N.J.
Original design application June 5, 1972, Ser. No. 260,064. Divided and this application Aug. 20, 1973, Ser. No. 390,109
Term of patent 14 years
Int. Cl. D25—*99*
U.S. Cl. D13—1 L

232,224
TIMER OR SIMILAR DEVICE
Richard W. Dobyns, 1351 Graymill Drive, Scotch Plains, N.J. 07076
Filed July 9, 1973, Ser. No. 377,424
Term of patent 14 years
Int. Cl. D10—*03*
U.S. Cl. D10—40

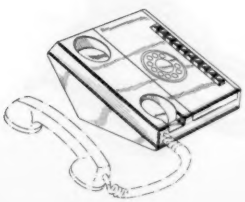


232,225
BOAT
Nealy Adolph Sweat, 408 Old Trolley Road, Summerville, S.C. 29483
Filed May 10, 1971, Ser. No. 142,114
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—63

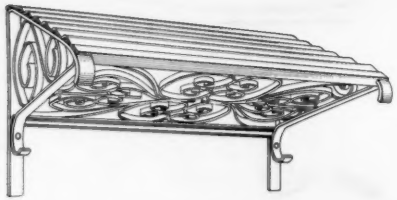
232,226
TELEPHONE SUBSTATION APPARATUS
James W. M. Bee and John F. Tyson, Ottawa, Ontario, and John A. Mahan, Kanata, Ontario, Canada, assignors to Bell Canada-Northern Electric Research Limited, Ottawa, Ontario, Canada
Filed Dec. 29, 1972, Ser. No. 319,886
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



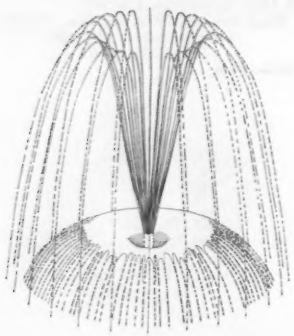
232,227
BASE FOR A TELEPHONE SET
James W. M. Bee and John F. Tyson, Ottawa, Ontario, and John A. Mahan, Kanata, Ontario, Canada, assignors to Bell Canada-Northern Electric Research Limited, Ottawa, Ontario, Canada
Filed Dec. 29, 1972, Ser. No. 319,885
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A



232,228
AWNING
George W. Wells, 75 Locust Ave., Peekskill, N.Y. 10566
Filed July 14, 1972, Ser. No. 271,806
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D21—6 B



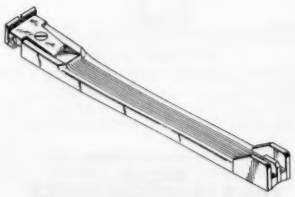
232,229
WATER FOUNTAIN
John O. Hruby, Jr., Burbank, Calif., assignor to Rain Jet Corporation, Burbank, Calif.
Filed June 1, 1970, Ser. No. 23,209
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—13



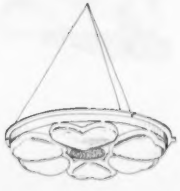
232,230
DESK TELEPHONE
James J. Davis, New Cumberland, and William R. De Lozier, Camp Hill, Pa., assignors to International Telephone and Telegraph Corporation, Nutley, N.J.
Filed May 9, 1972, Ser. No. 251,849
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

232,231
CARRYING CASE FOR COMBINED MAGNETIC, PEG AND CHALK BOARDS
Michael Langieri, Butler, N.J., assignor to Questor Corporation, Toledo, Ohio
Filed Oct. 2, 1972, Ser. No. 294,445
Term of patent 14 years
Int. Cl. D19—*07*
U.S. Cl. D25—1 R

232,232
GUNSIGHT
Robert Korzeniewski, 115 N. Live Oak St., Carthage, Tex. 75633
Filed Sept. 6, 1973, Ser. No. 394,912
Term of patent 14 years
Int. Cl. D16—*06;* D22—*99*
U.S. Cl. D22—8



232,233
FLY TRAP
Gregory Daratsos, Flushing, N.Y., assignor to Dars Met-All Industries, Inc., Long Island City, N.Y.
Filed June 13, 1973, Ser. No. 369,568
Term of patent 14 years
Int. Cl. D22—*06*
U.S. Cl. D22—19



232,234
FISHING POLE HOLDER
John P. Freed, Rte. 4, Box 528, Hot Springs, Ark. 71901
Filed Sept. 24, 1973, Ser. No. 400,150
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—13

232,235
FISHING LURE
Roger Cauquis, 25 Rue de la Prairie, 93 Aulnay, France
Filed June 15, 1973, Ser. No. 370,405
Term of patent 14 years
Int. Cl. D22—*05*
U.S. Cl. D22—27

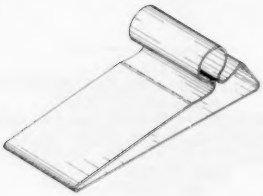
232,236
MODULE FOR A FILTER MEDIA OR SIMILAR ARTICLE
Joseph N. La Borde, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Oct. 5, 1972, Ser. No. 295,135
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4

232,237
MODULE FOR A FILTER MEDIA OR SIMILAR ARTICLE
Joseph N. La Borde, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Oct. 5, 1972, Ser. No. 295,136
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4

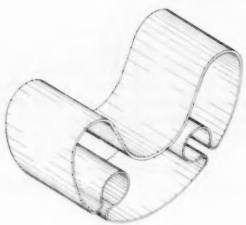
232,238
MODULE FOR A FILTER MEDIA OR SIMILAR ARTICLE
Joseph M. La Borde, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.
Filed Oct. 5, 1972, Ser. No. 295,213
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—4

232,239
PYRAMIDAL HORN
Alberto Birlain Schafler, Ceylan 687, Col. Industrial Vallejo, Mexico City, Mexico
Filed Aug. 23, 1972, Ser. No. 283,150
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 C

232,240
PLAYGROUND CLIMBER
Nancy Reed Markusen, Grand Forks, N. Dak., assignor to University of Idaho Research Foundation, Moscow, Idaho
Filed May 30, 1972, Ser. No. 258,222
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 H



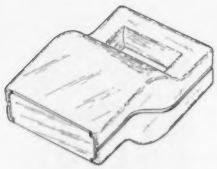
232,241
PLAYGROUND CLIMBER
Nancy Reed Markusen, Grand Forks, N. Dak., assignor to University of Idaho Research Foundation, Moscow, Idaho
Filed May 30, 1972, Ser. No. 258,226
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 H



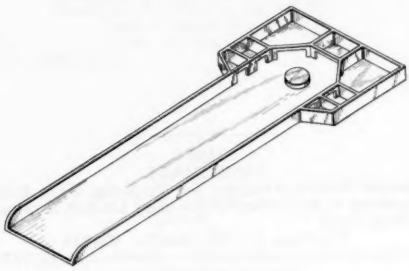
232,242
WALKING STILT
George G. Young, 5906 N. Waterbury Road, Des Moines, Iowa 50312
Filed Dec. 13, 1972, Ser. No. 314,701
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—14 E

232,243
TOY MICROPHONE AND STAND
William J. Thorp, deceased, late of Barrington, Ill., by Mildred B. Thorp, executrix, 162 Hillcrest Drive, Barrington, Ill. 60010
Filed May 30, 1972, Ser. No. 258,223
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 A

232,244
TOY TAPE MEASURE
Michael Langieri, 8 Cedar St., Butler, N.J. 07405
Filed Oct. 2, 1972, Ser. No. 294,337
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 A

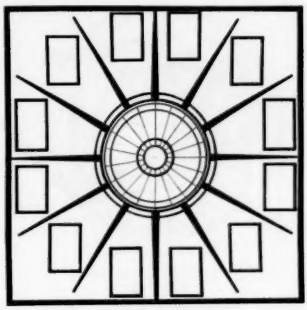


232,245
GAMEBOARD OR SIMILAR ARTICLE
Donald H. Sirois, P.O. Box 94, R.F.D., Hudson, N.H. 03051
Filed Mar. 13, 1973, Ser. No. 340,878
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 BB



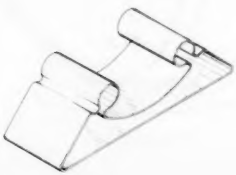
232,246
HANDLE FOR A FLOOR TREATING MACHINE
Stephen G. Hauser, Tarzana, Calif., assignor to Ampro, Ltd., Salt Lake City, Utah
Filed Jan. 31, 1972, Ser. No. 222,439
Term of patent 14 years
Int. Cl. D15—*05*
U.S. Cl. D37—3

232,247
GAME BOARD
Karin Koal, 5025 Cloudburst Hill, Columbia, Md. 21043
Filed Oct. 4, 1972, Ser. No. 294,778
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SS



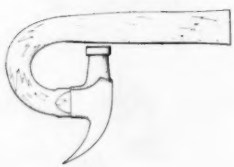
232,248
CHILD'S WALKING AND ROCKING TOY
Edward L. Cicero, 52—62 66th St., Maspeth, N.Y. 11378
Continuation-in-part of abandoned design application Ser. No. 106,313, Jan. 13, 1971. This application May 8, 1972, Ser. No. 251,589
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—14 E

232,249
PLAYGROUND CLIMBER
Nancy Reed Markusen, Grand Forks, N. Dak., assignor to University of Idaho Research Foundation, Moscow, Idaho
Filed May 30, 1972, Ser. No. 258,220
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 H

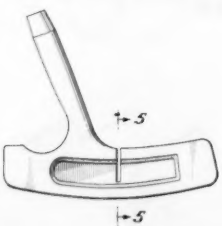


232,250
OCCUPANT PROPELLED AMUSEMENT BALL
Bradley J. Caylor, 1340 Kilrush Court, Pinole, Calif. 94564
Filed Sept. 18, 1972, Ser. No. 290,225
Term of patent 7 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ

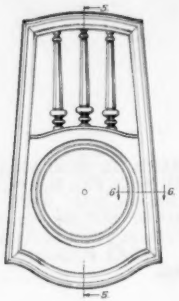
232,251
NOVELTY HAMMER
Leo M. Speight, 47 Pleasant St., East Longmeadow, Mass. 01028
Filed Dec. 11, 1972, Ser. No. 314,245
Term of patent 14 years
Int. Cl. D21—*03*
U.S. Cl. D34—15 A



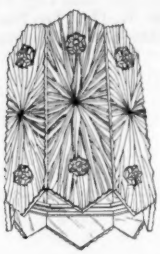
232,252
GOLF PUTTER HEAD
Raymon W. Cook, 406 Top Hill, San Antonio, Tex. 78209
Filed Mar. 21, 1973, Ser. No. 343,517
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GH



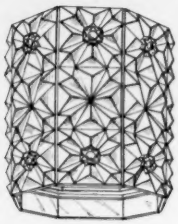
232,253
CLOCK HOUSING
Robert I. Kallman, Elburn, and Dominic J. De Fano, Palatine, Ill., assignors to Sunbeam Corporation, Chicago, Ill.
Filed June 30, 1972, Ser. No. 267,788
Term of patent 14 years
Int. Cl. D10—*01*
U.S. Cl. D42—7 R



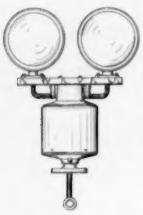
232,254
LAMP SHADE
Kenneth Yuhung Tongson, San Po Kong, Hong Kong, assignor to Star Industrial Company Limited, Kowloon, Hong Kong
Filed Sept. 24, 1973, Ser. No. 400,116
Claims priority, application Great Britain Apr. 12, 1973
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—16 D



232,255
LAMP SHADE
Kenneth Yuhung Tongson, San Po Kong, Hong Kong, assignor to Star Industrial Company Limited, Kowloon, Hong Kong
Filed Sept. 24, 1973, Ser. No. 400,117
Claims priority, application Great Britain Apr. 12, 1973
Term of patent 14 years
Int. Cl. D26—*05*
U.S. Cl. D48—16 D



232,256
REMOTE CONTROL SEARCH LIGHT
Taiji Satoh, Koshigaya, Japan, assignor to Sanshin Dengu Manufacturing Co., Ltd., Tokyo, Japan
Filed Nov. 1, 1972, Ser. No. 302,797
Term of patent 14 years
Int. Cl. D26—*03*
U.S. Cl. D48—20 K



232,257
DUAL LIGHTING FIXTURE
Ralph E. Paulson, 14802 Grevillea Ave., Lawndale, Calif. 90260
Filed Apr. 9, 1973, Ser. No. 349,012
Term of patent 14 years
Int. Cl. D26—*05*; D25—*01*
U.S. Cl. D48—23 R

232,258
COMBINED TELEVISION AND DIGITAL CLOCK OR SIMILAR ARTICLE
John B. MacDonald, Chesapeake, Va., assignor to General Electric Company
Filed July 12, 1972, Ser. No. 270,968
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D56—4 D

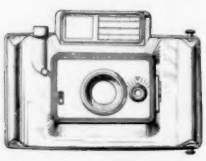
232,259
EYEGLASS CASE OR SIMILAR ARTICLE
Robert G. Brown, deceased, late of East Alton, Ill., by Gertrude T. Brown and Robert C. Brown, Ridgewood, N.J., and Gene Louise Grant, Cheyenne, Wyo., heirs, assignors to Magni-Case, Inc.
Filed Oct. 8, 1970, Ser. No. 25,400
Term of patent 14 years
Int. Cl. D16—*08*
U.S. Cl. D57—1

232,260
SPRING TEMPLE FOR AN EYEGLASS FRAME
Irving Gardner, P.O. Box 294, Hunter, N.Y. 12442
Filed May 1, 1973, Ser. No. 356,160
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 A

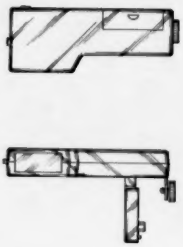
232,261
EYEGLASS FRAME
Yumatsu Murai, Fukui, Japan, assignor to Welling International Corp.
Filed July 9, 1973, Ser. No. 377,704
Term of patent 3½ years
Int. Cl. D16—*06*
U.S. Cl. D57—1 F

232,262
SPECTACLE FRONT
Jack Bloch, Leominster, Mass., assignor to Foster Grant Co., Inc., Leominster, Mass.
Filed Sept. 14, 1973, Ser. No. 397,560
Term of patent 14 years
Int. Cl. D16—*06*
U.S. Cl. D57—1 F

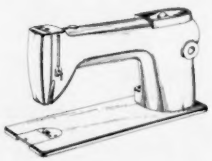
232,263
PHOTOGRAPHIC CAMERA
Ronald Emmerling, New City, N.Y., assignor to Berkey Photo, Inc., Paramus, N.J.
Filed Oct. 11, 1972, Ser. No. 296,629
Term of patent 14 years
Int. Cl. D16—*01*
U.S. Cl. D61—1 B



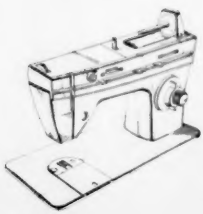
232,264
ELECTRONIC FLASH UNIT FOR CAMERAS
Keisuke Kitagawa, Tokyo, Japan, assignor to Kalimar, Inc., St. Louis, Mo.
Filed Mar. 1, 1973, Ser. No. 336,986
Term of patent 14 years
Int. Cl. D16—*05*
U.S. Cl. D61—1 F



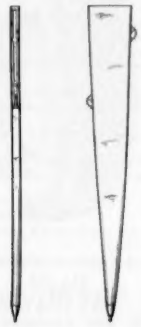
232,265
SEWING MACHINE FRAME OR SIMILAR ARTICLE
Manfred R. Laidig, Whippany, N.J., assignor to The Singer Company, New York, N.Y.
Filed Dec. 15, 1972, Ser. No. 315,778
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D70—1



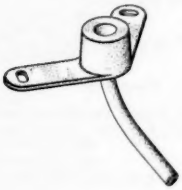
232,266
SEWING MACHINE FRAME OR SIMILAR ARTICLE
Wayne A. Current, Cranford, N.J., assignor to The Singer Company, New York, N.Y.
Filed Feb. 22, 1973, Ser. No. 334,819
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D70—1



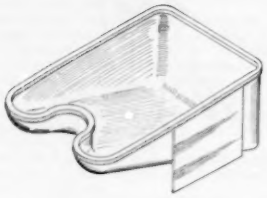
232,267
WRITING INSTRUMENT
Nathan A. Zepell, 1359 Santa Teresita Drive, Santa Barbara, Calif. 93105
Filed Aug. 18, 1972, Ser. No. 281,920
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—17 B



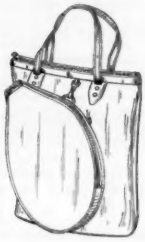
232,268
PEDIATRIC TRACHEOSTOMY TUBE
Bruce E. Fettel, Diamond Bar, and George M. Johnson, La Palma, Calif., assignors to Shiley Laboratories, Inc., Santa Ana, Calif.
Filed Mar. 30, 1973, Ser. No. 346,634
Term of patent 14 years
Int. Cl. D24—*03*
U.S. Cl. D83—1 K



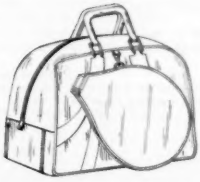
232,269
PORTABLE SHAMPOO TRAY
Gaye G. Cates, 1708 S. Monroe, San Angelo, Tex. 76901
Filed June 11, 1971, Ser. No. 152,484
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D86—10 F



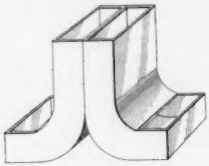
232,270
COMBINED CARRYING CASE AND TENNIS RACKET HOLDER
Samuel N. Glantz and Milton Glantz, both of 1127 W. Division, Chicago, Ill. 60622
Filed Sept. 18, 1972, Ser. No. 290,238
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



232,271
COMBINED CARRYING CASE AND TENNIS RACKET HOLDER
Samuel N. Glantz and Milton Glantz, both of 1127 W. Division, Chicago, Ill. 60622
Filed Sept. 18, 1972, Ser. No. 291,069
Term of patent 14 years
Int. Cl. D3—*02*
U.S. Cl. D87—1 R



232,272
TREE SEEDLING CARRIER
Philip F. Hahn, Eugene, Oreg., assignor to Georgia-Pacific Corporation, Portland, Oreg.
Filed Feb. 12, 1973, Ser. No. 331,580
Term of patent 14 years
Int. Cl. D3—*99*
U.S. Cl. D87—1 R



232,273
CARRYING BAG
Josef A. Ross, Bergenfield, N.J., assignor to Universal Trav-Ler Inc., Bronx, N.Y.
Filed Apr. 17, 1972, Ser. No. 245,050
Term of patent 14 years
Int. Cl. D3—*01*
U.S. Cl. D87—5 G

232,274
TIRE FOR A VEHICLE WHEEL
Brian Howard Holmes, Karl Gebert, and Hannelore Weinhold, deceased, by Gertrud Weinhold and Margarethe Sammang, legal representatives, all % Fort Dunlop, Erdington, Birmingham 24, England
Filed Mar. 17, 1972, Ser. No. 235,878
Claims priority, application Great Britain Sept. 25, 1971
Term of patent 14 years
Int. Cl. D12—*15*
U.S. Cl. D90—20 R

232,275
DRY SHAVER
Hiromichi Yamada, Isao Ayukawa, and Shuji Iwamoto, Osaka, Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan
Filed Oct. 25, 1972, Ser. No. 300,516
Claims priority, application Japan June 16, 1972
Term of patent 14 years
Int. Cl. D28—*03*
U.S. Cl. D95—3 A

LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 30TH DAY OF JULY, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A/S Kongsberg Vapenfabrik Kirkegardsveien: *See—*
Rognmo, Tore; and Sjotun, Kvrre, 3,826,193.

AB Centralsug: *See—*
Anton, Per; and Hyden Hans Olof, 3,826,366.

Abbema, Pieter. Multi-faced display sign. 3,826,027, Cl. 40-32.000.

Abbott Laboratories: *See—*
Bratu, Nicholas George, Jr.; and Jeffries, James Frederick, Jr., 3,826,619.
Flouret, George Rogelio, 3,826,794.

Abbott, Warwick R.; and Chen, Theodore C., to Integrated Memories, Inc. Differentially coupled memory arrays. 3,827,032, Cl. 340-173.0sp.

Abderhalden, Johann Heinrich, to Swiss Aluminium Ltd. Flexible connection for conveying pipes. 3,826,524, Cl. 285-61.000.

Abendroth, Paul, to Roland Offsetmaschinenfabrik Faber & Schleicher AG. Sheet conveyor mechanism for printing machines. 3,826,486, Cl. 271-204.000.

Abildgaard, William H.; and Groswith, Charles T., III, to Velo-Bind, Inc. Method and apparatus for casing books and product thereof. 3,825,963, Cl. 11-1.00r.

Abraham, Samuel V. Gradual release medicine carrier. 3,826,258, Cl. 128-260.000.

Accaries, Maurice Emile, to Compagnie des Compteurs. Electrolytic acidic solution for cadmiating of various parts. 3,826,722, Cl. 204-50.00r.

Acme General Corporation: *See—*
Ramsey, Joe B., 3,826,527.

Adams, Hunter D., to Zany Productions, Inc. Apparatus. 3,826,250, Cl. 128-24.200.

Adamson, James L. Aquarium cleaning device. 3,826,371, Cl. 210-169.000.

Addinall, Ramon Leonard; Lewis, William Trevor; and Mudroch, Otokar, to Steel Company of Canada Limited, The. Coated steel product. 3,826,628, Cl. 29-195.000.

Addressograph-Multigraph Corporation: *See—*
Kolibas, James Andrew, 3,826,570.
Zofchak, James T., 3,826,190.

Afekenstam, Bo Thuresson: *See—*
Blomback, Gustav Erik Birger; Blomback, Margareta; Olsson, Per Ingermar; Svendsen, Lars-Gundro; Afekenstam, Bo Thuresson; and Claeson, Karl Goran, 3,826,793.

Agence National de Valorisation de la Recherche ANVAR: *See—*
Jaegle, Pierre; Carillon, Antoine; Dhez, Pierre; Jamelot, Gerard; Sureau, Alain; Cukier, Michel; Dupeyrat, Monique; and Vogel, Claudine, 3,826,996.

Agnese, Joseph M. Portable alarm system. 3,827,039, Cl. 340-227.100.

Ahrenberg, Kurt, to Maschinenfabrik Gustav Eirich. Apparatus for moistening mixable materials. 3,826,476, Cl. 259-154.000.

Air Land Systems Company: *See—*
Fleming, James Evans, 3,826,874.

Airco, Inc.: *See—*
Kirk, Bradley S.; and Chappel, Raymond M., 3,826,742.

Akabane, Katsumi; and Otsuka, Shogo, to Kabushiki Kaisha Saneh. Sprayer for spraying a great volume of liquid though a wide angle with a low pressure. 3,826,430, Cl. 239-523.000.

Aktiebolaget Bofors: *See—*
Blomback, Gustav Erik Birger; Blomback, Margareta; Olsson, Per Ingermar; Svendsen, Lars-Gundro; Afekenstam, Bo Thuresson; and Claeson, Karl Goran, 3,826,793.

Aktiebolaget Svenska Elektromagneter: *See—*
Carlsson, Hans Thorsten Henrik, 3,826,236.

Alden Research Foundation: *See—*
Vano, Gerald Lawrence, 3,827,056.

Alderfer, Sterling W., to Steelastic Company, The. Radial tire carcass. 3,826,297, Cl. 152-354.000.

Alecci, Donald E.: *See—*
Sinnott, David J.; and Alecci, Donald E., 3,827,063.

Alexeev, Antonia: *See—*
Alexeev, Kirill M.; and Alexeev, Antonia, 3,826,152.

Alexeev, Kirill M.; and Alexeev, Antonia. Variable-ratio gear transmission. 3,826,152, Cl. 74-424.500.

All American Industries, Inc.: *See—*
Crimmins, Arthur G.; and Nissley, William G., Jr., 3,826,329.

Allemnd, Pierre: *See—*
Hovasse, Christian; and Allemnd, Pierre, 3,826,665.

Allen, Earnest R.: *See—*
Allen, Eulalie H.; Allen, Earnest R.; and Dickerson, Linwood, 3,826,160.

Allen, Eulalie H.; Allen, Earnest R.; and Dickerson, Linwood. Ear tag clamping tool. 3,826,160, Cl. 81-5.10r.

Allen, Marion F. Personnel/load Carrying system. 3,826,335, Cl. 182-10.000.

Allen, William J.; and Tomasulo, Walter M., Jr., to Wild Rover Corporation. Pushbutton switch having spider-shaped contact carrier. 3,826,885, Cl. 200-159.00b.

Alley, Raymond L., to American Warming & Ventilating, Inc., The. Differential pressure responsive damper. 3,826,179, Cl. 98-40.0rm.

Allis-Chalmers Corporation: *See—*
McKean, Joseph T.; and Steinhauer, Norman M., 3,826,940.

Allison, Stanley Watson, to D.T. & G. (Desings, Tools & Gauges) Limited. Tinning machine. 3,826,227, Cl. 118-60.000.

Allmannna Svenska Elektriska Aktiebolaget: *See—*
Lenander, Bo; and Ling, Bernt, 3,826,380.

Alpert, Selma. Brassiere. 3,826,266, Cl. 128-435.000.

Altares, Timothy, Jr., to Arco Polymers, Inc. Process of making antilumping expandable styrene polymers. 3,826,765, Cl. 260-2.50b.

Aluminum Company of America: *See—*
McGinnis, Michael K.; and Wallace, Paul F., 3,825,993.
Merkin, Bill C.; Tobias, Michael J.; Ray, Richard C.; and LaBarge, Robert L., 3,826,048.
Trimble, Robert M.; and Brouwer, Nicolaas L., 3,826,923.

Alvey, James W.: *See—*
Jones, Charles V.; Alvey, James W.; and Sanborn, Charles H., III, 3,826,170.

Ambrose, Michael J.: *See—*
De Corso, Serafino M.; Hussey, Charles E., Jr.; and Ambrose, Michael J., 3,826,080.

Ameco S.A.: *See—*
Bluntzer, Rene, 3,826,385.

Amercian Cyanamid Company: *See—*
Diehl, Robert Eugene; and Walworth, Bryant Leonidas, 3,826,643.

American Can Company: *See—*
Schlesinger, Sheldon I., 3,826,650.

American Cyanamid Company: *See—*
Capozza, Richard Carl, 3,826,787.

American Filtrona Corporation: *See—*
Berger, Richard M.; and Brooks, Elwin W., 3,826,177.

American Home Products Corporation: *See—*
Neugebauer, Gunther, 3,826,036.
Sarantakis, Dimitrois; McGregor, William H.; and McKinley, Wayne A., 3,826,796.

American Medical International, Inc.: *See—*
Ingles, William R., 3,826,922.

American Optical Corporation: *See—*
Laliberte, Norman U., 3,826,751.

American Safety Equipment Corporation: *See—*
Jakob, Hans, 3,825,979.

American Warming & Ventilating, Inc., The: *See—*
Alley, Raymond L., 3,826,179.

Amneus, John S.; and Leisring, Justin G., to Procter & Gamble Company, The. Storage and display package. 3,826,363, Cl. 206-430.000.

AMP Incorporated: *See—*
DeSio, Frederick Carl; and Werner, Walter Myers, 3,826,860.

Ampex Corporation: *See—*
Jones, Hale M., 3,826,446.

Amstelveen, Frans Verlinden: *See—*
Visser, Robertus Gerardus, 3,826,968.

Anderson, Albert W., to General Electric Company. Bypass contactor circuit. 3,826,959, Cl. 318-139.000.

Anderson, Arlynn W.; Coleman, Donald F.; Fuzzell, Joe E.; Greiner, Jonny R.; and Miller, Robert G., to Caterpillar Tractor Company. Motion alarm for vehicles. 3,827,024, Cl. 340-70.000.

Anderson, Clarence A. F., to Shaw-Walker Company, The. Insulated tape file. 3,826,552, Cl. 312-214.000.

Anderson, Cylde G., to Owens- Illinois, Inc. Carbonation system for recovery of sodium base pulping liquor. 3,826,710, Cl. 162-36.000.

Anderson, Donald R.; and Frisque, Alvin J., to Nalco Chemical Company. Stable high solids water soluble polymers. 3,826,771, Cl. 260-29.60h.

Anderson, Hugh G.; Rajan, Jai R. N.; and Morse, Wade H., to United States of America, Navy. Trunnion mounted marine thrust bearing/vibration reducer. 3,826,544, Cl. 308-160.000.

Anderson, James Kagey. Apparatus for improving printing surface of printing material. 3,826,016, Cl. 34-152.000.

Anderson, Paul L., to Sandoz-Wander Inc. N-substituted amino-N-nitroso-aminoacetonitriles as anti-anginal agents. 3,826,832, Cl. 424-250.000.

Anderson, Sidney Elmer: *See—*
Fowler, Gene Roger; and Anderson, Sidney Elmer, 3,826,350.

Anderson, Weston Arthur. Brainwave analysis and feedback method and apparatus. 3,826,243, Cl. 128-2.10b.

Ando, Takeki: *See—*

Hayase, Shunichiro; Shima, Seiya; Ando, Takeki; Kuroha, Hiroaki; and Kurosawa, Toshiaki, 3,826,961.

Andreotti, Raymond E., to United States of America, Army. Liquid chromatography apparatus. 3,826,373, Cl. 210-198.00c.

Andrus, William C.; and Wienszkowski, Thomas H., to Steelcase Inc. Article of furniture. 3,826,533, Cl. 297-445.000.

Anselmino, Giovanni, to Fiat Societa per Azioni. Mounting system for rear wheel angular speed detectors for motor motor vehicles. 3,826,933, Cl. 310-168.000.

Antipov, Igor; and Melzer, Paul Albin, to International Business Machines Corporation. Process for forming a pedestal base transistor. 3,826,698, Cl. 148-191.000.

Antlfinger, George J.; and Von Kamp, Harold E., to Goodrich, B. F., Company, The. Compositions containing a reactive hydroxyl-containing vinyl chloride polymer and an liquid polyepoxide. 3,826,669, Cl. 106-287.00r.

Anton, Per; and Hyden Hans Olof, to AB Centralsug. Device for selectively discharging refuse material for separate recovery of fibrous material. 3,826,366, Cl. 209-74.000.

Appleton, John P.: *See—*
Woodroffe, Jaime A.; and Appleton, John P., 3,826,920.

Aqua-Chem, Inc.: *See—*
Rulseh, Roy M., 3,826,604.

Arai, Hiroshi; and Ota, Jun, to Toyota Jidosha Kogyo Kabushiki Kaisha. Vehicle brake systems using skid control devices. 3,826,541, Cl. 303-21.00f.

Arco Polymers, Inc.: *See—*
Altares, Timothy, Jr., 3,826,765.

Ariel Creative Corporation: *See—*
Schwartz, Michel S., 3,826,551.

Ark-Les Switch Corporation: *See—*
Mallett, James A.; and Mitchell, Edward B., 3,827,008.

Armstrong, Henry P., to Truth Incorporated. Roller assembly. 3,826,044, Cl. 49-420.000.

Armstrong, Lee R.: *See—*
Midolo, Lawrence L.; and Armstrong, Lee R., 3,826,330.

Arts, Marcus: *See—*
Plough, Charles T.; Tvedt, Jan Otto; Arts, Marcus; Eastwood, H. Keith; and Woo, Frank, 3,826,924.

Asada, Kaoru: *See—*
Maruyama, Fumishige; Yasui, Toshiyuki; and Asada, Kaoru, 3,826,075.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Suzuki, Isamu; Nakahara, Yasuji; Ichikawa, Kiyoshi; and Osonoi, Kaoru, 3,826,768.

Asahi Kasie Kogyo Kabushiki Kaisha: *See—*
Masuda, Yoshinori; Sato, Hideo; Kobayashi, Tadahiro; and Terada, Yoshiaki, 3,826,712.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Nobusawa, Tsukumo, 3,827,060.

Ashida, Katsuzi: *See—*
Murata, Kazuo; Ikeda, Hirotaka; Ashida, Katsuzi; and Sato, Uichi, 3,826,369.

Ashworth, Brian Thomas; Crawford, Kenneth; and Quan, Peter Michael, to Imperial Chemical Industries Limited. Antioxidants. 3,826,779, Cl. 260-45.90r.

Astill, Cyril J.: *See—*
Whittaker, Stanley James; Astill, Cyril J.; and Janzen, Peter, 3,826,465.

Atkins, Herbert Ashley, to Beecham Group Limited. Bottle closure. 3,826,397, Cl. 215-295.000.

Atlantic Research Corporation: *See—*
Olcott, Eugene L., 3,826,707.

Atomic Energy of Canada Limited: *See—*
Whittaker, Stanley James; Astill, Cyril J.; and Janzen, Peter, 3,826,465.

Auto Crane Company: *See—*
Simmons, Charles Clair, 3,827,040.

Auto-Masters Limited: *See—*
Marsh, Charles Richard, 3,826,306.

Automec, Inc.: *See—*
Marotto, Alan P., 3,826,119.

Avco Corporation: *See—*
Hill, Charles E., 3,826,929.
Twarog, John J., Jr., 3,826,942.

B-A-L Products Corporation; a division of Nova Products of California: *See—*
Spear, Richard S., 3,826,470.

Bachman, Albert J., to Delaval Turbine, Inc. Liquid level indicating apparatus. 3,826,139, Cl. 73-311.000.

Bachmann, Andrew G.: *See—*
Batson, Robert E.; and Bachmann, Andrew G., 3,826,673.

Bachmann, Andrew G.; and Litteral, Gerald M., to Loctite Corporation. Process for preparing discrete paricles of microencapsulated liquid anaerobic compositions. 3,826,756, Cl. 252-316.000.

Bachmann, Gerhard, to Siemens Aktiengesellschaft. Fixture for holding semiconductor discs during diffusion of doping material. 3,826,377, Cl. 211-41.000.

Badische Anilin- & Soda-Fabrik Aktiengesellschaft: *See—*
Daut, Helmut; Soenksen, Uwe; and Wiersdorff, Walter Wielant, 3,826,727.
Fischer, Adolf, 3,826,642.
Pommer, Ernst-Heinrich; and Will, Hannelore, 3,826,639.

Badische Anilin-& Soda-Fabrik Aktiengesellschaft: *See—*
Dehnert, Johannes; and Dunkelmann, Guenter, 3,826,800.

Badoux, Jean-Daniel: *See—*
Simonin, Jean-Claude; and Badoux, Jean-Daniel, 3,826,161.

Baher, Bernard H. Combined level, square and plumb tool. 3,826,013, Cl. 33-390.000.

Bahl, James Melvin, to Deere & Company. Variable pressure hydraulic system. 3,826,090, Cl. 60-445.000.

Bailey, James D., to Health Products, Inc. Self-container disposable swab-type medication applicator. 3,826,259, Cl. 128-269.000.

Bailey, John J.; and Keeran, William C. Lens for a signal lamp. 3,826,914, Cl. 240-106.00r.

Bailey, John S., to Tyco Laboratories, Inc. Method and apparatus for growing crystalline bodies from the melt using a porous die member. 3,826,625, Cl. 23-301.0sp.

Bak, Martin J.: *See—*
Salcman, Michael; and Bak, Martin J., 3,826,244.

Baker, Robert G.; and Reighard, Alan B., to Nordson Corporation. Thermoplastic dispenser system having non-clogging melting zone. 3,826,224, Cl. 118-2.000.

Baksay, Ivan, to Zirconium Technology Corporation. Manufacture of tubes with improved metallic yield strength and elongation properties. 3,826,124, Cl. 72-367.000.

Bales Jewelry, Inc.: *See—*
Thenot, Raymond, 3,826,003.

Ball, Harry; and Steward, Henry A., to Technical Fabricators, Inc. Rotary filter apparatus having means for controlling the level of filtrate. 3,826,370, Cl. 210-109.000.

Ball, James H., to Minnesota Mining and Manufacturing Company. Mounting means for thermal switches. 3,827,015, Cl. 337-414.000.

Ballas, George C.: *See—*
Ballas, George C.; and Geist, Thomas N. (said Geist assor. to said), 3,826,068.

Ballas, George C.; and Geist, Thomas N., said Geist assor. to said Ballas, George C. Rotary cutting assembly. 3,826,068, Cl. 56-12.700.

Bally Manufacturing Corporation: *See—*
Foster, Colin E.; and Lally, Joseph E., 3,826,883.

Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., to Olinkraft, Inc. Self-locking tamperproof container. 3,826,420, Cl. 229-45.000.

Ban, Itsuki. Record track indicator apparatus for a multitrack tape player. 3,827,082, Cl. 360-106.000.

Band, Ian T.; and Mac Leod, Kenneth J., to Hewlett-Packard Company. Time multiplexed rate multiplier. 3,826,901, Cl. 235-150.300.

Banerjea, Tara N.: *See—*
Schwartz, Robert B.; Banerjea, Tara N.; and Stinson, Donald B., Jr., 3,826,050.

Banks, Bruce A.: *See—*
Byers, David C.; and Banks, Bruce A., 3,826,729.

Barber-Colman Company: *See—*
Folmar, Reginald J., 3,826,941.

Barchard, John: *See—*
Carroll, Henry F., 3,826,393.

Bard, C. R., Inc.: *See—*
Frassica, James J., 3,826,396.

Barden Corporation, The: *See—*
McKee, Lewis W., 3,826,545.

Barnes, Faye G.: *See—*
Shenkenberg, David R.; Barnes, Faye G.; and Webb, Byron H., 3,826,850.

Barron, Mark B.: *See—*
Kurz, Bruno; Barron, Mark B.; and Butler, Walter J., 3,825,995.

Barron, Mark B.; and Butler, Walter J., to General Electric Company. Gate-diffusion isolation for JFET depletion-mode bucket brigade circuit. 3,825,996, Cl. 29-571.000.

Bartlett, Peter G. Welding system controller. 3,826,890, Cl. 219-131.00r.

Basic Incorporated: *See—*
Cook, Henry A.; and Radway, Jerrold E., 3,826,812.

Bassett, William M.: *See—*
Dourian, Vincent J.; and Bassett, William M., 3,826,046.

Bassinger, Ross, to Reed Tool Company. Pneumatic impact tool. 3,826,316, Cl. 173-73.000.

Batson, Robert E.; and Bachmann, Andrew G., to Loctite Corporation. Coating process. 3,826,673, Cl. 117-62.200.

Battelle Memorial Institute: *See—*
Heinzer, Paul, 3,826,573.

Bauer, Joseph John, to Burroughs Corporation. Digital data retrieval system with dynamic window skew. 3,827,078, Cl. 360-45.000.

Baugirdas, Kristupas; and Reddy, Redreddy Sukumar, to V.A.C. Industries, Inc. Outside plug door system. 3,826,042, Cl. 49-213.000.

Baumgardner, John D.; and Ebeling, Dorothy J., to Donelly Mirrors, Inc. View expanding and directing optical system. 3,826,562, Cl. 350-286.000.

Baumgartner, Alfons, to Heidenhain, Johannes, Dr. Digital weighing scale with an incremental measuring system. 3,826,318, Cl. 177-25.000.

Baycura, Orestes M. Solid state television camera. 3,827,075, Cl. 358-41.000.

Bayer Aktiengesellschaft: *See—*
Buchel, Karl Heinz; Meiser, Werner; Plempel, Manfred; and Metzger, Carl, 3,826,836.
Kishino, Shigeo; Yamada, Yasuo; Kurahashi, Yoshio; and Kume, Toyohiko, 3,826,831.
Komarek, Ernst; and Spahrkas, Heinrich, 3,826,610.

Beacham, Harry Hoyt: *See—*
Thomas, James Larue; and Beacham, Harry Hoyt, 3,826,777.

Wright, Carl Leonard; and Beacham, Harry Hoyt, 3,826,786.
Bear Brand Hosiery Co.: *See—*
Lewis, George E.; Brown, Albert W.; and Osborne, Harris Dean, 3,826,062.
Beauregard, William W., to Springfield Wire, Inc. Flow control valve. 3,826,463, Cl. 251-120.000.
Beck, August, to Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft. Spacer construction for thermally insulating concentric tubes. 3,826,286, Cl. 138-114.000.
Becker & Van Hullen Niederrheinische Maschinenfabrik: *See—*
Hutter, Wilhelm, 3,826,601.
Beckman Instruments, Inc.: *See—*
Zichis, Joseph, 3,826,821.
Beecham Group Limited: *See—*
Atkins, Herbert Ashley, 3,826,397.
Behenna, Joshua John; and Phipps, Graham Harold George, to International Standard Electric Corporation. Adjustable magnetically focused triode. 3,826,945, Cl. 314-153.000.
Behr, Robert D.; and Behr, Seiko K. Surface heating unit having selective concentric electric sheathed heating elements. 3,826,897, Cl. 219-456.000.
Behr, Seiko K.: *See—*
Behr, Robert D.; and Behr, Seiko K., 3,826,897.
Bell & Howell Company: *See—*
Jacobs, John H.; Corrigan, Richard A.; and Gaynor, Josepah, 3,826,653.
Bell, Rupert B., to Kuss R. L., & Co., Inc. Flexible filter. 3,826,372, Cl. 210-172.000.
Bell Telephone Laboratories, Incorporated: *See—*
Smith, Donald Tolman; and Spenninger, William Robert (said Smith assor. to), 3,825,987.
Bellinger, S. Lawrence: *See—*
Smythe, William J.; Bellinger, S. Lawrence; Diebler, Herman G.; and Dannewitz, Robert, 3,826,615.
Beloit Corporation: *See—*
Shaffer, Ronald L.; and Stambaugh, Frederic P., 3,826,602.
Bendel, Hermann, to Siemens Aktiengesellschaft. Echo suppressor for a speech circuit in a four-wire transmission system. 3,826,878, Cl. 179-170.600.
Bendix Corporation, The: *See—*
Fairbairn, Leroy W.; and Dyce, John W., 3,827,007.
Kasakowski, Henry R.; and Washburn, Douglas J., 3,827,047.
Platt, Walter A.; and Reynolds, Gibson, 3,826,174.
Troeger, Henry, 3,825,992.
Willoughby, Anthony Roy, 3,827,037.
Beneke Division, Beatrice Foods Co.: *See—*
Higginson, Bernard E., 3,825,958.
Benson, Richard: *See—*
Pflaum, Norman C., 3,826,973.
Benson, Richard A.: *See—*
Rigney, Edward T.; Benson, Richard A.; and Edgerton, Bradford W., 3,826,321.
Bently Engineering Company Limited, The: *See—*
Peberdy, Roland, 3,826,111.
Berg Manufacturing Company, The: *See—*
Klimek, Boleslaw, 3,826,283.
Berger, Richard M.; and Brooks, Elwin W., to American Filtrona Corporation. Apparatus for making filter means. 3,826,177, Cl. 93-1.00c.
Berghofer, Hans. Disengageable safety coupling for conduits. 3,826,464, Cl. 251-149.900.
Bergqvist, Claes Bertil: *See—*
Carlen, Jan-Christer Henric Ovesson; and Bergqvist, Claes Bertil, 3,826,697.
Bergson, Arnold A.: *See—*
Wurm, Robert J.; and Bergson, Arnold A., 3,826,870.
Berliner, Emanuel R.; and Ishii, Harukichi, to Bristoline, Inc. Adjustable tension control means for microscopes. 3,826,559, Cl. 350-86.000.
Bernards, Antonius P.: *See—*
Van Der Koogh, Gerbrand; and Bernards, Antonius P., 3,826,918.
Berndt, Alvin W.; and Freyberger, Alex. Gravity flow portable laundry liquid dispenser. 3,826,408, Cl. 222-70.000.
Bespak Industries Limited: *See—*
Warren, William Edward, 3,826,413.
Bethke, Erwin, to Smithe, F. L., Machine Company, Inc. Apparatus for controlling the tension on web material. 3,826,442, Cl. 242-75.500.
Bethlehem Steel Corporation: *See—*
Fetner, Martin J.; and Hunsicker, Glenn L., 3,826,132.
Fisher, Thomas W., 3,826,693.
Humphries, Darral V., 3,826,709.
Melloy, George F.; Bramfitt, Bruce L.; and Marder, Arnold R., 3,826,691.
Paolini, Gregory F., 3,826,662.
Beuschel, Werner: *See—*
Froehlich, Alfred; Tschopp, Paul; and Beuschel, Werner, 3,826,788.
Bevan, Brian. Display device. 3,826,026, Cl. 40-10.00b.
Bevis, Paul A.; Hoyt, Hazen L., III; Miner, Thomas E.; Kuypers, Norbert T.; and Kuypers, Norbert T., to Xerox Corporation. Cassette. 3,827,072, Cl. 354-278.000.
Bhatt, Harshad J.; and Tuttle, James W., to Cogar Corporation. Electrical conductor having a high resistance to electromigration. 3,826,626, Cl. 29-191.600.
Biaunier, Alain: *See—*
De Lavalette, Pierre de Lacroix; Hein, Daniel; Boudet, Georges; Meyer, Jean-Claude; Neron, Alain; Biaunier, Alain; Blaiberg, Alain; Nouveau, Jean Louis; Charpentier, Jacques Georges; and Jacquot, Alain, 3,825,982.
Bilbrey, Robert A.; and Maytham, Walter J., to Speed Systems, Inc. Cable stripping tool. 3,826,001, Cl. 30-90.100.
Billy, Emile: *See—*
Enjolras, Christian; Gautier, Pierre; and Billy, Emile, 3,826,403.
Binder, Wolfgang Max, to RCA Corporation. Device for mounting and orienting an irregular workpiece. 3,826,047, Cl. 51-277.000.
Bio-Medical Sciences, Inc.: *See—*
Godsey, Frank W., Jr., 3,826,734.
Pickett, Charles G.; and Chadha, Desh D., 3,826,141.
Bio-Medical Sciences Incorporated: *See—*
Weinstein, Berel; and Scott, Jimmie D., 3,826,142.
Birch, Richard Wykeham Beaufoy. Pickup guidance mechanisms. 3,826,505, Cl. 274-23.00a.
Bischoff, Vincent E.; and Keur, Robert I., to Dick, A. B., Company. Selective charging magnitude compensation. 3,827,057, Cl. 346-75.000.
Bissonette, Vernon L., to Eastman Kodak Company. Process for developing radiation-sensitive elements. 3,826,652, Cl. 96-48.0pd.
Bittner, Michael A.: *See—*
Glazer, Burton G.; and Bittner, Michael A., 3,827,050.
Black, Robert B. Autoclave. 3,826,612, Cl. 21-94.000.
Blackwood, Jack R., to Howmedica, Inc. Stoma drainage appliance. 3,826,262, Cl. 128-283.000.
Blaiberg, Alain: *See—*
De Lavalette, Pierre de Lacroix; Hein, Daniel; Boudet, Georges; Meyer, Jean-Claude; Neron, Alain; Biaunier, Alain; Blaiberg, Alain; Nouveau, Jean Louis; Charpentier, Jacques Georges; and Jacquot, Alain, 3,825,982.
Blair, Calvin B. tillage apparatus. 3,826,315, Cl. 172-514.000.
Blair, David. Three wheeled automotive vehicular construction. 3,826,326, Cl. 180-25.00r.
Bleinberger, Warren Edward; Franke, Edward Louis, Jr.; Galloway, John Vernon; Richardson, George William; Thomas, Albert Richard; and Thomas, Palmer Doyle, to Western Electric Company, Incorporated. Method of processing aluminum electrical conductors. 3,82,690, Cl. 148-11.20a.
Bloch, Bertrand M., to Office National d'Etudes et de Recherches Aerospatides. Polyquinazolines and their method of manufacture. 3,826,783, Cl. 260-47.0cz.
Blomback, Gustav Erik Birger; Blomback, Margareta; Olsson, Per Ingermar; Svendsen, Lars-Gundro; Afekenstam, Bo Thuresson; and Claeson, Karl Goran, to Aktiebolaget Bofors. Anticoagulant peptides related to fibrino peptides. 3,826,793, Cl. 260-112.500.
Blomback, Margareta: *See—*
Blomback, Gustav Erik Birger; Blomback, Margareta; Olsson, Per Ingermar; Svendsen, Lars-Gundro; Afekenstam, Bo Thuresson; and Claeson, Karl Goran, 3,826,793.
Bluntzer, Rene, to Ameco S.A. Silo filling arrangement. 3,826,385, Cl. 214-17.0ca.
Blust, Henry Leo; and Lindburg, Norman Lee, to RCA Corporation. Plug sealing of hermetic enclosures. 3,826,634, Cl. 65-34.000.
Board of Trustees of the Leland Stanford Junior University, The: *See—*
Bonner, William A.; Sweet, Richard G.; and Hulett, Henry R., 3,826,364.
Boaz, Virgil L.: *See—*
Thomas, Michael W.; and Boaz, Virgil L., 3,827,018.
Bobst, J., & Fils S.A.: *See—*
Preisig, Roland, 3,826,058.
Preisig, Roland; and Frei, Arthur, 3,826,348.
Bobzin, James E.; and Kasprzak, David P., to Celotex Corporation, The. Surface panel and mounting means therefor. 3,826,055, Cl. 52-483.000.
Bock Products, Inc.: *See—*
Weber, Charles A., 3,826,516.
Bockenhuber, Karl; Freudenschuss, Otto; and von Belvard, Peter Revy, to Vockenhuber, Karl and Jaiser. Camera. 3,826,567, Cl. 352-137.000.
Bodmer, Maximiliaan Hubert: *See—*
Van Staaden, Cornelis Augustinus; Bodmer, Maximiliaan Hubert; Van Hijfte, Herman Michel; and Gellekink, Bernard, 3,827,049.
Bodson, Fernand Jacques Joseph, to Societe des Mines Montagne et Fonderies de Zinc de la Viella. Method of purifying zinc sulphate solutions. 3,826,648, Cl. 75-109.000.
Bogner, Bruce Fredric; and Bowman, David Francis. Lens fed antenna array system. 3,827,055, Cl. 343-754.000.
Bohli, William H., to United States of America, Navy. Adhesive dispenser. 3,826,580, Cl. 401-132.000.
Bois, Louis Marius Jean. Vent valve with pilot valve for oil-tanker storage tanks. 3,826,277, Cl. 137-493.000.
Boldt, Bruce W.: *See—*
Kohls, Frederick J.; Boldt, Bruce W.; and Gouge, Wilfred A., Sr., 3,826,743.
Bolick, Fred C., Jr., to Lanier Electronic Laboratory, Inc. Transcriber dictation indexing apparatus. 3,827,079, Cl. 360-79.000.
Bolt, Beranek and Newman, Inc.: *See—*
Scharton, Terry D., 3,826,331.
Bom, Cornelis Johannes Gerardus: *See—*
van der Lely, Ary; and Bom, Cornelis Johannes Gerardus, 3,826,314.
Bond, Frank. Anchor support. 3,826,214, Cl. 114-210.000.

Bonner, William A.; Sweet, Richard G.; and Hulett, Henry R., to Board of Trustees of the Leland Stanford Junior University, The. Particle sorting method and apparatus. 3,826,364, Cl. 209-3.000.

Bonvicini, Giacomo. Motor-driven spraying machine to be carried on the workers back. 3,826,426, Cl. 239-127.000.

Booth, Newell O., to United States of America, Navy. Induced doppler sonar. 3,827,022, Cl. 340-3.00r.

Boraas, Stan L. C.; and Nystuen, Marcus I., to Economics Laboratory, Inc. Additive control and injection system useful in laundry machine operations. 3,826,113, Cl. 68-12.00r.

Bordenca, Carl; Johnson, Robert P.; and Dorschner, Kenneth P., to SCM Corporation. Insect repellent compositions and process having an N-substituted hydroxyalkyl amine as an ingredient. 3,826,842, Cl. 424-325.000.

Borel, Robert J.; Foote, James C., Jr.; and Warren, Horace G., to Eastman Kodak Company. Photographic film handling improvement. 3,826,655, Cl. 96-76.00r.

Bork, Klaus: *See—*
Kattner, Erich; and Bork, Klaus, 3,826,192.

Bosch, Robert, G.m.b.H.: *See—*
Flaig, Ulrich, 3,826,158.
Steinmann, Helmut, 3,826,979.
Ursel, Eckhard; and Seibicke, Horst, 3,825,971.

Bottoms, Harry Simister, to Lucas, Joseph, (Industries) Limited. Electrically driven pump. 3,826,595, Cl. 417-370.000.

Boudet, Georges: *See—*
De Lavalette, Pierre de Lacroix; Hein, Daniel; Boudet, Georges; Meyer, Jean-Claude; Neron, Alain; Biaunier, Alain; Blaiberg, Alain; Nouveau, Jean Louis; Charpentier, Jacques Georges; and Jacquot, Alain, 3,825,982.

Bouyssounouse, Bernard: *See—*
Pelet, Pierre A.; Bouyssounouse, Bernard; and Hass, Fritz, 3,826,167.

Bovio, Michele: *See—*
Giolitti, Nicolo; Bovio, Michele; and Dalmasso, Claudio, 3,826,882.
Giolitti, Nicolo; and Bovio, Michele, 3,826,915.

Bowers, John O., Jr.: *See—*
Toney, Philip A.; and Bowers, John O., Jr., 3,827,044.

Bowes, Robert J.; and Miller, John J., to GTE Sylvania Incorporated. Cathode positioning retainer. 3,826,947, Cl. 314-268.000.

Bowman, David Francis: *See—*
Bogner, Bruce Fredric; and Bowman, David Francis, 3,827,055.

Boyd, David M.; and Wood, Charles E., to Universal Oil Products Company. Fractionator control system for reboiling narrow boiling range liquids. 3,826,719, Cl. 203-1.000.

Boyd, James; Garfield, Lawrence A.; Hanninen, Clifford; and Maki, Eugene, to Cooper Range Company. Mining and tunneling process involving alternated application of thermal and mechanical energy. 3,826,536, Cl. 299-14.000.

Boyd, James; Garfield, Lawrence A.; Hanninen, Clifford; and Maki, Eugene, to Copper Range Company. Mining and tunnelling process involving alternated application of thermal and mechanical energy. 3,826,537, Cl. 299-14.000.

BP Chemicals International Limited: *See—*
Fergusson, Ian Douglas, 3,826,428.

Bradel, John H., Jr.; and Watkins, Lew. Rolling mill drive construction. 3,826,108, Cl. 64-9.00r.

Braeuninger, Karl F. Mandrel for extruding tubing. 3,826,122, Cl. 72-264.000.

Bramfitt, Bruce L.: *See—*
Melloy, George F.; Bramfitt, Bruce L.; and Marder, Arnold R., 3,826,691.

Brand, Werner; and Haarkotter, Hermann, to Waggonfabrik Verdingen AG. Pneumatic spring for railroad cars. 3,826,507, Cl. 267-3.000.

Brandon, Harold J.; and Spicer, Wilson C., to General Motors Corporation. Recirculating combustion apparatus jet pump. 3,826,083, Cl. 60-39.650.

Branstrom, Bruce R.; and Huber, Frank W., to United Aircraft Corporation. Turbine coolant flow system. 3,826,084, Cl. 60-39.660.

Bratu, Nicholas George, Jr.; and Jeffries, James Frederick, Jr., to Abbott Laboratories. Test apparatus for direct radio immunoassay for antigens and their antibodies. 3,826,619, Cl. 23-253.00r.

Braunstein, Harry R., to Westinghouse Electric Corporation. Fuse assembly for oil-filled transformers. 3,827,011, Cl. 337-276.000.

Braxton Corporation: *See—*
White, Roby Byron, 3,826,993.

Bray, James A.: *See—*
Smith, John R.; and Bray, James A., 3,826,675.

Brecher, Nicholas M. Packaging device. 3,826,359, Cl. 206-216.000.

Breil, Heinz: *See—*
Ziegler, Karl; Breil, Heinz; Holzkamp, Erhard; and Heinz, Martin, 3,826,792.

Brener, Adrian. Punch-card time recording device. 3,827,058, Cl. 346-86.000.

Brennan, William M.: *See—*
Nelson, Bud D.; and Brennan, William M., 3,826,449.

Brier Manufacturing Company: *See—*
Sakalys, Vytautas S., 3,825,978.

Bringol, Charles Ronald, to International Business Machines Corporation. Constant tangential velocity motor control for a disc recording system. 3,826,965, Cl. 318-39.000.

Bristol-Myers Company: *See—*
Kawaguchi, Hiroshi; Fujisawa, Kei-Ichi; Tsukiura, Hiroshi; and Konishi, Masataka, 3,826,802.

Bristoline, Inc.: *See—*
Berliner, Emanuel R.; and Ishii, Harukichi, 3,826,559.

British Cast Iron Research Associates: *See—*
Nicholas, Kenneth Ernest Lewis, 3,826,658.

Broadway, Alexander Richard William; Fong, William; and Rawcliffe, Gordon Hindle, to National Research Development Corporation. Electric Motors. 3,826,960, Cl. 318-323.000.

Brois, Stanley J., to Esso Research and Engineering Company. Dispersant additives containing phosphorus, sulfur and nitrogen. 3,826,797, Cl. 260-125.000.

Brokaw, Hal R. Vibration damper for elongate members. 3,826,339, Cl. 188-1.00b.

Brokaw, Hal R. Vibration damper for slender vertical structures. 3,826,340, Cl. 188-1.00b.

Broker, David C.; and Wisniewski, Judith L., to Johnson Service Company. Tubular fluidic resistor. 3,826,284, Cl. 137-833.000.

Brooks, Elwin W.: *See—*
Berger, Richard M.; and Brooks, Elwin W., 3,826,177.

Brooks, Reginald Gwyn. Method and apparatus for manufacturing precision articles from molten articles. 3,826,301, Cl. 164-46.000.

Brouwer, Nicolaas L.: *See—*
Trimble, Robert M.; and Brouwer, Nicolaas L., 3,826,923.

Brower, Frank M.: *See—*
Roberts, Charles B.; and Brower, Frank M., 3,826,820.

Brown, Albert W.: *See—*
Lewis, George E.; Brown, Albert W.; and Osborne, Harris Dean, 3,826,062.

Brown, Albert William, to International Telephone and Telegraph Corporation, mesne. Pressure loss compensator. 3,826,273, Cl. 137-1.000.

Brown, Charles H.: *See—*
Walters, Theodore M., 3,826,368.

Brown, Fon R., Jr., to Continental Distributors, Inc. Nephelometer. 3,826,574, Cl. 356-103.000.

Brown, Gene T.; and Whiting, John V., to Scope Incorporated. Remote control adapter. 3,826,986, Cl. 325-16.000.

Brown Oil Tools, Inc.: *See—*
Brown,Cicero C.; and Cochran, Chudleigh B. (said Cochran assor. to said), 3,826,307.

Brown,Cicero C.; and Cochran, Chudleigh B., said Cochran assor. to said Brown Oil Tools, Inc. Well packer and testing apparatus. 3,826,307, Cl. 166-120.000.

Bruant, Philippe, to Societe Anonyme dite: Aquitaine Total Organico. Anoinic lactampolymerization process using an O-C..N containing activator. 3,826,785, Cl. 260-78.001.

Brukovsky, Igor Pavlovich; Yakolvlev, Pavel Borisovich; and Gutterman, Kirill Davidovich. System for automatic control of electron beam heating device. 3,826,889, Cl. 219-121.0eb.

Brundrett, Charles Philipp: *See—*
Hoffman, Gordon H.; and Brundrett, Charles Philipp, 3,826,758.

Brunswick Corporation: *See—*
Epstein, Sheldon L.; and Wessling, Bernard W., 3,826,686.

BSR Limited: *See—*
Evans, Philip Henry; and Lane, Norman, 3,826,504.

Buan, Danilo P.: *See—*
Groswith, Charles T., III; and Buan, Danilo P., 3,825,964.
Groswith, Charles T., III; and Buan, Danilo P., 3,826,168.

Bucalo, Louis, to Investors in Ventures, Inc. Implanting method. 3,826,241, Cl. 128-1.00r.

Bucek, Jiri B.; and Shultz, James R., to Fincor, Inc. Variable pulse width generator employing flip-flop in combination with integrator-differentiator network. 3,826,928, Cl. 307-265.000.

Buchel, Karl Heinz; Meiser, Werner; Plempel, Manfred; and Metzger, Carl, to Bayer Aktiengesellschaft. Phenyl-imidazolyl-fatty acid derivateves for treating mycotic infection. 3,826,836, Cl. 424-273.000.

Buchel, Karl-Heinz: *See—*
Timmler, Helmut; Buchel, Karl-Heinz; and Plempel, Manfred, 3,826,837.

Buchholz, Wilhelm: *See—*
Detert, Ernst-Rolf; and Buchholz, Wilhelm, 3,826,268.

Buckeye Cellulose Corporation, The: *See—*
Schoggen, Howard Leon; Holmgren, John Richard; and Harris, Thomas Sanders, Jr., 3,826,711.

Buckman Laboratories, Inc.: *See—*
Morgan, Frederic L., 3,826,632.

Bucksch Herbert, to Rheiner Maschinenfabrik Windhoff Akt.-Ges. Device for removing ballast from railway roadbeds. 3,826,195, Cl. 104-2.000.

Buckwalter, James K. Baffle for a sound producing device. 3,826,333, Cl. 181-153.000.

Budd Company, The: *See—*
Russell-French, Harry M., 3,826,202.

Buehler Corporation, The: *See—*
Faust, Elbert R., 3,826,355.

Bunker Hill Company, The: *See—*
Orlankini, Bruno; Um, Taesung; and Larson, Andrew H., 3,826,819.

Bunn, Dorrance P., Jr.: *See—*
Jones, Henry B.; and Bunn, Dorrance P., Jr., 3,826,624.

Burack, Robert D.: *See—*
Yaroshuk, Nicholas; and Burack, Robert D., 3,826,919.

Burk, Sanger M., Jr., to United States of America, National Aeronautics and Space Administration. Deployable flexible ventral fins for use as an emergency spin-recovery device in aircraft. 3,826,448, Cl. 244-91.000.

Burns, Bernard J.: *See—*
Diamond, Julius; Douglas, George H.; and Burns, Bernard J., 3,826,843.

Burroughs Corporation: *See—*
Bauer, Joseph John, 3,827,078.

Burtnyk, Victor: *See—*
Carlson, Norman R.; Burtnyk, Victor; and Zitelli, William E., 3,826,906.

Busby, Terence Stanley; and Cox, Geoffrey Charles, to National Research Development Corporation. High zirconia containing glass ceramics. 3,826,659, Cl. 106-39.600.

Buselmeier, Theodore J. Prosthetic shunt. 3,826,257, Cl. 128-214.00r.

Busse, Oswald; and Klesper, Hugo, to Passavant-Werke Michelbacher Hutte. Apparatus enabling the shifting of groups of filter plates in a filter press. 3,826,374, Cl. 210-225.000.

Butler, Arthur Devon; Debroka, Robert Lee; Moyer, Horace Bradley; and Yinger, Robald Lee, to Miles Laboratories, Inc. Package for tablets. 3,826,358, Cl. 206-204.000.

Butler, Walter J.: *See—*
Barron, Mark B.; and Butler, Walter J., 3,825,996.
Kurz, Bruno; Barron, Mark B.; and Butler, Walter J., 3,825,995.

Buttery, Ron G.: *See—*
Guadagni, Dante G.; and Buttery, Ron G., 3,826,851.

Byers, David C.; and Banks, Bruce A., to United States of America, National Aeronautics and Space Administration. Sputtering holes with ion beamlets. 3,826,729, Cl. 204-192.000.

Byrne, Frank, to United States of America, National Aeronautics and Space Administration. Digital servo controller. 3,826,964, Cl. 318-602.000.

Cableform Limited: *See—*
Morton, John; Stevens, Keith Drummond; and Thexton, Graham Spencer, 3,826,962.

Caldemeyer, Daniel F. Rocking recliner with rocker lock and antioverturn shock absorber. 3,826,532, Cl. 297-270.000.

Calgon Corporation: *See—*
Hoover, Merwin Frederick; Sinkovitz, Gloria Dimarco; and Schaper, Raymond Joseph, 3,826,767.
Szabo, Miklos Tamas; Sharpe, Andrew Jackson, Jr.; and Sherwood, Nancy Spicer, 3,826,311.

California Pellet Mill Company: *See—*
Gilman, Robert W., 3,826,475.

Calis, Alex J. Improved self-loading and self-propelled haulage vehicle. 3,826,387, Cl. 214-90.000.

Cama, John J.: *See—*
Rabinowitz, Azriel J.; and Cama, John J., 3,826,194.

Cambiaghi, Danilo: *See—*
Schnyder, Conrad W.; and Cambiaghi, Danilo, 3,826,548.

Camco, Incorporated: *See—*
Tausch, Gilbert H., 3,826,309.

Cameron, Frank L.; Carothers, John W.; and Shaw, Woodrow G., to Westinghouse Electric Corporation. Composite sectionalized open-type drop-out-type fusible output with series enclosed current limiting fuse. 3,827,010, Cl. 337-168.000.

Cameron, William R. Readily assembled joint. 3,826,053, Cl. 52-309.000.

Campbell, James W., to Wetoma Corporation. Panel cutting method and apparatus. 3,826,164, Cl. 83-23.000.

Campbell, Lyman L.: *See—*
Kulig, Constantine W.; and Campbell, Lyman L., 3,826,381.

Canadian Patents and Development Limited: *See—*
Della Torre, Edward; and Dimyan, Magid, 3,827,035.

Canon Camera Kabushiki Kaisha: *See—*
Ihaya, Kazuhiko, 3,826,683.

Canon Denshi Kabushiki Kaisha: *See—*
Hosaka, Iwao; and Yokota, Yuji, 3,827,083.

Canon Kabushiki Kaisha: *See—*
Kiyohara, Takehiko; and Mochizuke, Noritaka, 3,827,064.
Matsumoto, Kazuya, 3,826,555.
Nagashima, Shinichiro; Tsuchiya, Kaichi; Sakamoto, Yoshihiro; Yamakami, Hiroshi; and Tomari, Seiji, 3,826,747.
Sakamaki, Hisashi; and Kimura, Yoshimasa, 3,826,569.
Yamamichi, Masayoshi, 3,827,067.
Yanagisawa, Takeshi; Tanikoshi, Kinzi; and Ono, Yusuke, 3,827,066.

Canon Kabushki Kaisha: *See—*
Hosaka, Iwao; and Yokota, Yuji, 3,827,083.

Canova, Henry L. Jet propulsion apparatus for boats. 3,826,217, Cl. 115-12.00r.

Cantarano, Marcus. Non-electrostatic method for producing electrographic image. 3,826,672, Cl. 117-17.500.

Cantor, Abraham; and Winicov, Murray W., to West Laboratories, Inc. Germicidal dips. 3,826,826, Cl. 424-149.000.

Capozza, Richard Carl, to American Cyanamid Company. Regular alternating copolymers of styrene and imidazolines and their derivatives. 3,826,787, Cl. 260-85.50r.

Capuano, Italo A., to Ionics, Incorporated, mesne. Total mercury monitor. 3,826,614, Cl. 23-230.00r.

Capuano, Italo A., to Ionics, Incorporated, mesne. Automatic mercury monitor. 3,826,618, Cl. 23-232.00r.

Carillon, Antoine: *See—*
Jaegle, Pierre; Carillon, Antoine; Dhez, Pierre; Jamelot, Gerard; Sureau, Alain; Cukier, Michel; Dupeyrat, Monique; and Vogel, Claudine, 3,826,996.

Carl Zeiss-Stiftung: *See—*
Hoerenz, Peter G.; and Ludl, Helmut, 3,827,070.

Carlen, Jan-Christer Henric Ovesson; and Bergqvist, Claes Bertil, to Sandvikens Jernverks Aktiebolag. Corrosion resistant edge tools such as razor blades. 3,826,697, Cl. 148-37.000.

Carlson, Andrew, & Sons, Inc.: *See—*
Carlson, Andrew L.; and Pinezich, John R., 3,826,376.

Carlson, Andrew L.; and Pinezich, John R., to Carlson, Andrew, & Sons, Inc. Septic tank construction. 3,826,376, Cl. 210-519.000.

Carlson, Norman R.; Burtnyk, Victor; and Zitelli, William E., to Westinghouse Electric Corporation. Desk console power systems simulator with hands-on control. 3,826,906, Cl. 235-151.210.

Carlson, Robert C., to Minnesota Mining and Manufacturing Company. Self-emulsified polyurethanes prepared by direct sulfonation of isocyanate. 3,826,769, Cl. 260-29.2tn.

Carlsson, Hans Thorsten Henrik, to Aktiebolaget Svenska Elektromagneter. Ignition system for internal combustion engines. 3,826,236, Cl. 123-148.00r.

Carmichail, Donald C.: *See—*
Chambers, Douglas L.; Carmichail, Donald C.; and Wan, Chong T., 3,826,728.

Carothers, John W.: *See—*
Cameron, Frank L.; Carothers, John W.; and Shaw, Woodrow G., 3,827,010.

Carrier Corporation: *See—*
Lamb, Jimmy W.; and English, Richard A., 3,826,104.

Carroll, Henry F., 40% to Barchard, John. Self-propelled unloader. 3,826,393, Cl. 214-674.000.

Casio Computer Co., Ltd.: *See—*
Kashio, Toshio, 3,827,028.

Cast, Jack. Monolithic structure forming means with metal tubular bracing. 3,826,460, Cl. 249-27.000.

Castle & Cooke, Inc., mesne: *See—*
Vadas, Leslie, 3,826,185.

Caterpillar Tractor C.: *See—*
Purcell, Robert J.; and Wehr, Kenneth E., 3,826,325.

Caterpillar Tractor Co.: *See—*
Liptak, Neil R.; and Echerd, Beno E., 3,826,337.

Caterpillar Tractor Company: *See—*
Anderson, Arlynn W.; Coleman, Donald F.; Fuzzell, Joe E.; Greiner, Jonny R.; and Miller, Robert G., 3,827,024.
Dawes, Stanley G., 3,826,522.
Eckert, Edwin Joseph, 3,826,506.
Freese, Gary P., 3,826,149.
Muller, Thomas P., 3,826,543.
Oldenburg, Dorrance; and Sturges, James Robert, 3,826,388.

Cayton, David W., to FMC Corporation. No can-no fill for high speed rotary filling machine. 3,826,293, Cl. 141-142.000.

Cecce, Robert F. Cargo transferring vessel and method. 3,826,384, Cl. 214-13.000.

Cech, Robert E., to General Electric Company. Rare earth intermetallic compounds containing calcium. 3,826,696, Cl. 148-31.570.

Celanese Corporation: *See—*
Stuetz, Dagobert E., 3,826,611.

Cellu Products Company: *See—*
Currie, Grover C.; and Doll, Brendan L., 3,826,165.

Celotex Corporation, The: *See—*
Bobzin, James E.; and Kasprzak, David P., 3,826,055.

Center Line Tool Co., Inc.: *See—*
Lipper, Ray W., 3,826,538.

Cerrone, Marcello: *See—*
Rio, Arturo; Cerrone, Marcello; and Saini, Alberto, 3,826,680.

Cetrulo, Frank A., to National Factors, Inc. Vine reducing apparatus for combine. 3,826,436, Cl. 241-186.00r.

Chadha, Desh D.: *See—*
Pickett, Charles G.; and Chadha, Desh D., 3,826,141.

Chambers, Douglas L.; Carmichail, Donald C.; and Wan, Chong T., to Shatterproof Glass Corporation. Transparent article having reduced solar radiation transmittance and method of making the same. 3,826,728, Cl. 204-192.000.

Chambers, Richard E.: *See—*
Smith, Harold D.; and Chambers, Richard E., 3,826,056.

Champayne, Roy J. Abrading machine with dust collecting unit. 3,826,045, Cl. 51-170.00t.

Chang, Nai-Chong. Anemometer device. 3,826,136, Cl. 73-189.000.

Chao, Gene, to United States of America, Navy. Tunable electroacoustic transducers. 3,827,002, Cl. 333-72.000.

Chapman, Harry Samuel. Method of in-situ heat seal sleeving for large rolls. 3,826,702, Cl. 156-86.000.

Chappel, Raymond M.: *See—*
Kirk, Bradley S.; and Chappel, Raymond M., 3,826,742.

Charpentier, Jacques Georges: *See—*
De Lavalette, Pierre de Lacroix; Hein, Daniel; Boudet, Georges; Meyer, Jean-Claude; Neron, Alain; Biaunier, Alain; Blaiberg, Alain; Nouveau, Jean Louis; Charpentier, Jacques Georges; and Jacquot, Alain, 3,825,982.

Chatters, Roy M.; Kimbrell, James E.; and Slater, Shelby D., to United States of America, Atomic Energy Commission. Method for determining sugar/starch contents in aqueous solutions. 3,826,617, Cl. 23-230.00m.

Chebond Corporation: *See—*
Christensen, Ross Leon; and Robitschek, Paul, 3,826,770.

Check, John M.; and Rupert, Gary F., to Raycon Corporation. Workpiece positioning and holding apparatus. 3,826,484, Cl. 269-299.000.

Chemische Werke Huls Aktiengesellschaft: *See—*
Michels, Alfred; and Fleischer, Kurt, 3,826,677.

Chen, Theodore C.: *See—*
Abbott, Warwick R.; and Chen, Theodore C., 3,827,032.

Chevron Research Company: *See—*
Coon, Marvin D., 3,826,633.
Csicsery, Sigmund M.; and Mulaskey, Bernard F., 3,826,237.
Kittrell, James R., 3,826,736.
Kobzina, John W.; Moore, Joseph F.; and Kohn, Gustave K., 3,826,644.

Chilcoate, Elmer F. Liquid dosage dispenser. 3,826,409, Cl. 222-107.000.

Christensen, Rolf: *See—*
Hansen, Gunnar Lyshoj; and Christensen, Rolf, 3,826,596.

Christensen, Ross Leon; and Robitschek, Paul, to Chebond Corporation. Stabilized mixture of urea formaldehyde and methylolureas. 3,826,770, Cl. 260-29.40r.

Chu, Ting L., to Texas Instruments Incorporated. Welding method for fabricating large area single crystals and the product thereof. 3,826,700, Cl. 148-177.000.

CH_2O, Inc.: *See—*
Courtright, Burr, 3,826,275.

Ciba-Geigy AG: *See—*
Froehlich, Alfred; Tschopp, Paul; and Beuschel, Werner, 3,826,788.

Ciba-Geigy Corporation: *See—*
Huebner, Charles Ferdinand, 3,826,835.
Rody, Jean; and Lind, Hanns, 3,826,752.
Schindler, Walter; Schmid, Erich; and Zuest, Armin, 3,826,833.

Ciecluch, Ronald F. W.; and Simon, Myron S., to Polaroid Corporation. Novel photographic products and processes. 3,826,801, Cl. 260-202.000.

Cincinnati Incorporated: *See—*
Ketterer, Roger A., 3,826,120.

Cincinnati Milacron Inc.: *See—*
Wise, Robert G.; and Wiebe, Harold Dean, 3,826,988.

Cinquegrani, Vincent J. Fuel injection apparatus in an internal combustion engine. 3,826,234, Cl. 123-139.0aw.

Cipas, Albert: *See—*
Pittis, Bertram H.; and Cipas, Albert, 3,826,191.

Claeson, Karl Goran: *See—*
Blomback, Gustav Erik Birger; Blomback, Margareta; Olsson, Per Ingermar; Svendsen, Lars-Gundro; Afekenstam, Bo Thuresson; and Claeson, Karl Goran, 3,826,793.

Clark, Bill D.: *See—*
Godfrey, Vern L.; and Clark, Bill D., 3,826,389.

Clark, Edward C., to United States of America, Navy. Throttling ball valve. 3,826,281, Cl. 137-625.310.

Clark, Raymond L. Apparatus for coating particulate material. 3,826,226, Cl. 118-49.100.

Clarke, Ellis Whiteside. Method for measuring the rate of flows of liquids. 3,826,137, Cl. 73-194.00r.

Classe, Anthony V.; and Mehn, Robert P., to Ipco Hospital Supply Corporation, mesne. Animal cage. 3,826,229, Cl. 119-17.000.

Classen, Franz, to Erste Deutsche Floatglas GmbH & Co.OHG. Channel for the conveyance of liquid glass. 3,826,636, Cl. 65-182.00r.

Clauss, Julius A., Jr. Automotive transmission. 3,826,157, Cl. 74-763.000.

Claverie, Claude: *See—*
De Thiculloy, Bernard; and Claverie, Claude, 3,827,074.

Claxton, William E.; and Hollow, James E., to Firestone Tire & Rubber Company, The. Stress-strain and area readout instrument. 3,826,902, Cl. 235-151.300.

Clayton Specialties, Inc.: *See—*
Palmer, Wesley G., 3,826,512.

Clukey, Howard V.: *See—*
Grossman, Leonard N.; Kaznoff, Alexis I.; and Clukey, Howard V., 3,826,754.

Cobb, Gary W.: *See—*
Kastner, William D.; and Cobb, Gary W., 3,827,031.

Cochran, Burton L.; and Stein, William B., to Warner & Swasey Company, The. Cartridge-type cutoff and grooving tool. 3,825,981, Cl. 29-96.000.

Cochran, Chudleigh B.: *See—*
Brown,Cicero C.; and Cochran, Chudleigh B., 3,826,307.

Cogar Corporation: *See—*
Bhatt, Harshad J.; and Tuttle, James W., 3,826,626.

Cohen, Ernest S.; and Shubert, Roland H., to United States of America, Interior. Magnetite coating composition. 3,826,667, Cl. 106-259.000.

Colaco, Stephen Francis, to Ferranti Limited. Semiconductor information storage devices. 3,827,034, Cl. 340-173.0ca.

Coleman, Clyde Franklin, to RCA Corporation. Method of soldering circuit components to a substrate. 3,825,994, Cl. 29-498.000.

Coleman, Donald F.: *See—*
Anderson, Arlynn W.; Coleman, Donald F.; Fuzzell, Joe E.; Greiner, Jonny R.; and Miller, Robert G., 3,827,024.

Coleman, William R.: *See—*
Duffey, Thomas E.; and Coleman, William R., 3,826,232.

Colgate-Palmolive Company: *See—*
Demangeon, M. Yvon; and Rasmussen, M. Per Hjorth, 3,826,749.
Finck, Patricia A., 3,826,748.
Inamorato, Jack T.; and Dickson, Robert E., 3,826,759.
Liebowitz, Marvin; and McHugh, Neil M., 3,826,682.
Miles, Gilbert De Wayne, 3,826,441.

Collins Radio Company: *See—*
Williford, Jerry G., 3,826,999.

Commercial Electronics, Inc.: *See—*
Irwin, Charles P., 3,826,577.

Compagnie des Compteurs: *See—*
Accaries, Maurice Emile, 3,826,722.

Compere-Whitney, Alicia L., to Imperatrix. Process for producing product from fossil fuel. 3,826,308, Cl. 166-246.000.

Comstock, Lowell R.; and Smith, Percy L., to Union Carbide Corporation. Flame retardant polyesters based on cyclohexene dimethanol. 3,826,805, Cl. 260-869.000.

Comstock, Lowell R.; and Smith, Percy L., to Union Carbide Corporation. Flame retardant polyesters from broninated diols. 3,826,806, Cl. 260-869.000.

Conair, Inc.: *See—*
Heymann, Bernard R., 3,826,343.

Confino, Maurice: *See—*
Moulin, Louis; Confino, Maurice; and Godard, Gerard, 3,826,822.

Conrad, Joseph D., Jr.; Gangloff, Wilmer C., Jr.; and Luongo, Michael C., to Westinghouse Electric Corporation. System and method for operating a steam turbine with independent overspeed protection expecially adapted for a nuclear reactor powered steam turine. 3,826,094, Cl. 60-686.000.

Conrad, Joseph D., Jr.; and Gangloff, Wilmer C., Jr., to Westinghouse Electric Corporation. General system and method for operating a steam turbine with independent overspeed protection especially adapted for a nuclear reactor powered stem turbine. 3,826,05, Cl. 60-686.000.

Continental Can Company, Inc.: *See—*
Hougen, Gary A.; and Kloc, Henry F., 3,826,400.
Hougen, Gary A.; and Kloc, Henry F., 3,826,402.

Continental Distributors, Inc.: *See—*
Brown, Fon R., Jr., 3,826,574.

Cook, Edward H., Jr.: *See—*
Schultz, Robert F.; and Cook, Edward H., Jr., 3,826,731.
Schultz, Robert F.; Cook, Edward H., Jr.; and 364203, 3,826,732.
Schultz, Robert F.; and Cook, Edward H., Jr., 3,826,733.

Cook, Harold D., to Teletype Corporation. Display apparatus with visual segment indicia. 3,827,041, Cl. 340-324.0ad.

Cook, Henry A.; and Radway, Jerrold E., to Basic Incorporated. Treatment of flue gases and the like. 3,826,812, Cl. 423-242.000.

Cooke, Richard C., Jr., to General Electric Company. Silicone composition containing pretreated silica filler. 3,826,773, Cl. 260-37.0sb.

Coon, Marvin D., to Chevron Research Company. Fuel additives. 3,826,633, Cl. 44-72.000.

Cooper, Jerry W.; and Haley, John S., to Dayco Corporation. Self-recoiling hose. 3,826,288, Cl. 138-178.000.

Cooper, Kenneth, to Westinghouse Electric Corporation. Cathode ray tube with inorganic phosphor and fiber optic face plate. 3,826,944, Cl. 313-473.000.

Cooper Range Company: *See—*
Boyd, James; Garfield, Lawrence A.; Hanninen, Clifford; and Maki, Eugene, 3,826,536.

Copper Range Company: *See—*
Boyd, James; Garfield, Lawrence A.; Hanninen, Clifford; and Maki, Eugene, 3,826,537.

Corman, James C.: *See—*
Mc Laughlin, Michael H.; Walmet, Gunnar E.; and Corman, James C., 3,826,957.

Cornelison, James J.: *See—*
Johnson, Edgar G., Jr.; and Cornelison, James J., 3,826,621.

Cornell, Alverin M., to Cornell Forge Company. Method of making golf club head. 3,825,991, Cl. 29-412.000.

Cornell Forge Company: *See—*
Cornell, Alverin M., 3,825,991.

Cornell, Richard R., to Groovfold, Inc. Drawer construction. 3,826,554, Cl. 312-330.000.

Corning Glass Works: *See—*
Schultz, Peter C., 3,826,560.

Corrigan, Richard A.: *See—*
Jacobs, John H.; Corrigan, Richard A.; and Gaynor, Josepah, 3,826,653.

Cosby, Thomas L. Closed cycle energy conversion system. 3,826,092, Cl. 60-647.000.

Cotton, Michael John, to Nu Swift International Limited. Pressure vessel testing. 3,826,125, Cl. 73-4.00r.

Courtright, Burr, to CH_2O, Inc. Hose reel construction. 3,826,275, Cl. 137-355.200.

Cox, Geoffrey Charles: *See—*
Busby, Terence Stanley; and Cox, Geoffrey Charles, 3,826,659.

CPC International Inc.: *See—*
Horn, Harold E.; and Godzicki, Martin M., 3,826,857.
Suekane, Mikio; Kanno, Mutsuo; and Hasegawa, Shiro, 3,826,714.

Cramer, Harold. Step stool. 3,826,336, Cl. 182-15.000.

Crane Co.: *See—*
Rittenhouse, Howard E., 3,826,138.

Crawford, Beverley; and Jenkins, Genelle. Automatic animal feeder. 3,826,231, Cl. 119-51.120.

Crawford, Kenneth: *See—*
Ashworth, Brian Thomas; Crawford, Kenneth; and Quan, Peter Michael, 3,826,779.

Crimmins, Arthur G.; and Nissley, William G., Jr., to All American Industries, Inc. Air cushion apparatus. 3,826,329, Cl. 180-125.000.

Cromwell, Douglas E.: *See—*
Ross, Gerald D.; and Cromwell, Douglas E., 3,826,520.

Croset, Michel, to Sescosem-Societe Europeenne de Semiconducteurs et de Microelectronique. Interconnection for integrated UHF arrangements. 3,826,956, Cl. 317-234.00r.

Crown Cork & Seal Company, Inc.: *See—*
Kneusel, Raymond H. P., 3,826,412.

Csicsery, Sigmund M.; and Mulaskey, Bernard F., to Chevron Research Company. Two-stage fuel injection cold start method and apparatus for carrying out same. 3,826,237, Cl. 123-179.001.

Csontos, Michael W., to Eastman Kodak Company. Apparatus for the synchronization of separate picture and sound records. 3,826,566, Cl. 352-12.000.

Cukier, Michel: *See—*
Jaegle, Pierre; Carillon, Antoine; Dhez, Pierre; Jamelot, Gerard; Sureau, Alain; Cukier, Michel; Dupeyrat, Monique; and Vogel, Claudine, 3,826,996.

Culpepper, Bertram C., Jr. Building insulation and sheathing. 3,826,054, Cl. 52-309.000.

Curchod, Donald Butler. Tyre changers. 3,826,299, Cl. 157-1.240.

Currey, Norman S.; and Renshaw, John H., to Lockheed Aircraft Corporation. Landing gear for stol airplanes. 3,826,450, Cl. 244-103.00r.

Currie, Grover C.; and Doll, Brendan L., to Cellu Products Company. Apparatus for processing foam sheet material. 3,826,165, Cl. 83-110.000.

Cushing, Donald S.; and Jenkins, Thomas E., to General Electric Company. Front loading dishwasher employing plastic tub construction. 3,826,553, Cl. 312-253.000.

Cushman, Donald R.: *See—*
Schick, John W.; and Cushman, Donald R., 3,826,725.

Cvetnic, John. Electric vehicle control. 3,826,958, Cl. 318-113.000.

Czarnetzky, Edward J.: *See—*
Forest, Joseph G.; and Czarnetzky, Edward J., 3,826,827.

d/b/a Zeiss, Carl: *See—*
Hoerenz, Peter G.; and Ludl, Helmut, 3,827,070.

Dalmasso, Claudio: *See—*
Giolitti, Nicolo; Bovio, Michele; and Dalmasso, Claudio, 3,826,882.

Danfoss A/S: *See—*
Hansen, Gunnar Lyshoj; and Christensen, Rolf, 3,826,596.

Danguy, Ghislain: *See—*
Demillecamps, Edmond; and Danguy, Ghislain, 3,826,774.

D'Aniello, Liborio Lee. Pre-setting tool gauge for spindle machines. 3,826,011, Cl. 33-185.00r.

Dannenberg, Raymond O.: *See—*
Nichols, Ivan L.; and Dannenberg, Raymond O., 3,826,808.

Dannewitz, Robert: *See—*
Smythe, William J.; Bellinger, S. Lawrence; Diebler, Herman G.; and Dannewitz, Robert, 3,826,615.

Dart Industries, Inc.: *See—*
Kiss, Kornell D.; and Vandegaer, Jan E., 3,826,780.

Data Packaging Corporation: *See—*
Watkins, Louis W., Jr., 3,826,489.

Daut, Helmut; Soenksen, Uwe; and Wiersdorff, Walter Wielant, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Brightening colored α acids and derivatives thereof. 3,826,727, Cl. 204-158.00r.

Davies, Evan John. Eddy current couplings. 3,826,937, Cl. 310-105.000.

Davis, B. T. Battery locking device. 3,826,115, Cl. 70-258.000.

Davis, Bernard E. Side view mirror attachment for motor vehicle. 3,826,563, Cl. 350-303-.

Davis, Robert H.: *See—*
Shick, John W.; Davis, Robert H.; and Simpson, Charles A., 3,826,746.
Simpson, Charles A.; Davis, Robert H.; and Sedlak, Michael, 3,826,620.

Davis, Robert H. Portable electric tube light. 3,826,910, Cl. 240-6.40b.

Dawes, Stanley G., to Caterpillar Tractor Company. Quick acting contact coupling. 3,826,522, Cl. 285-18.000.

Day, Edmund P.; Fairbank, William M.; and Opfer, James E., to Leland Stanford Junior University, Board of. Method and apparatus for detecting nuclear magnetic resonance. 3,826,972, Cl. 324-.50r.

Dayco Corporation: *See—*
Cooper, Jerry W.; and Haley, John S., 3,826,288.

De Andrea, Joseph D. Device for demonstrating and calculating trigonometric functions. 3,826,021, Cl. 35-34.000.

De Beers Consolidated Mines Limited: *See—*
Roy, Alexander Rose, 3,826,630.

De Corso, Serafino M.; Hussey, Charles E., Jr.; and Ambrose, Michael J., to Westinghouse Electric Corporation. System for reducing nitrogen-oxygen compound in the exhaust of a gas turbine. 3,826,080, Cl. 60-39.550.

De Cote, Robert: *See—*
Erlich, Melvin P.; Stoller, Milton; Grand, Stanley; and De Cote, Robert, 3,826,899.

De Haven, Howard E.: *See—*
Hruda, Robert M.; and De Haven, Howard E., 3,826,950.

De Konig, Jan; and van der Veen, Romke. Wave motion compensating assembly for suction dredger. 3,826,023, Cl. 37-58.000.

De Lavalette, Pierre de Lacroix; Hein, Daniel; Boudet, Georges; Meyer, Jean-Claude; Neron, Alain; Biaunier, Alain; Blaiberg, Alain; Nouveau, Jean Louis; Charpentier, Jacques Georges; and Jacquot, Alain, to SKF Compagnie d'Applications Mecaniques. Method of making low friction bearings and bearings made therefrom. 3,825,982, Cl. 29-149.5nm.

De Longchamp, Jacques-Albert Huot, to Sable Freres International. Suspension device for a vehicle seat. 3,826,457, Cl. 248-399.000.

De Santis, Raymond P.; and De Troyer, George D., to Wolvering-Pentronix, Inc. Adjusting mechanism and process for powder compacting press. 3,826,599, Cl. 425-78.000.

De Thieulloy, Bernard; and Claverie, Claude, to Thomson-CSF. Transmission device for multiplex transmission between a television camera and its control unit. 3,827,074, Cl. 358-15.000.

De Troyer, George D.: *See—*
De Santis, Raymond P.; and De Troyer, George D., 3,826,599.

Dean, Harvey R.: *See—*
Withers, James G., Jr.; Dean, Harvey R.; and Ross, Stuart T., 3,826,304.

Debroka, Robert Lee: *See—*
Butler, Arthur Devon; Debroka, Robert Lee; Moyer, Horace Bradley; and Yinger, Robald Lee, 3,826,358.

Deere & Company: *See—*
Bahl, James Melvin, 3,826,090.
Fowler, Gene Roger; and Anderson, Sidney Elmer, 3,826,350.
Hunter, George Dwight, 3,826,517.
Johnson, Earl C.; and Hiseler, Stanley Robert, 3,826,295.
Pershing, Roscoe Louis; and Romig, Bernard Edwin, 3,825,952.
Stover, David Emmert, 3,826,327.
Wood, William Robert, 3,826,070.

Dehnert, Johannes; and Dunkelmann, Guenter, to Badische Anilin-& Soda-Fabrik Aktiengesellschaft. Basic indazole azo compounds. 3,826,800, Cl. 260-147.000.

Deichelmann, Hermann; and Veit, Herrmann, to Pfaudler-Werke AG. Enameled electrical sensing probe. 3,826,980, Cl. 324-61.00p.

Deidrich, Donald F.: *See—*
Havstad, Harold R.; and Deidrich, Donald F., 3,826,255.

Del Mar Engineering Laboratories: *See—*
Elder, Boyd B., 3,826,491.

Delamere & Williams Company: *See—*
Hunter, Konald Arthur, 3,826,061.

Delaval Turbine, Inc.: *See—*
Bachman, Albert J., 3,826,139.

Delgado, Manuel M. Exothermic gas generator. 3,826,623, Cl. 23-281.000.

Della Torre, Edward; and Dimyan, Magid, to Canadian Patents and Development Limited and Canadian Patents and Development Limited. Magnetic domain propagation plate with minimized temperature sensitivity. 3,827,035, Cl. 340-174.0tf.

Demangeon, M. Yvon; and Rasmussen, M. Per Hjorth, to Colgate-Palmolive Company. Detergent composition. 3,826,749, Cl. 252-121.000.

Demillecamps, Edmond; and Danguy, Ghislain, to Solvay & Cie. Resinous compositions based on polyvinylidene fluoride. 3,826,774, Cl. 260-41.00b.

Dervy, Aram J., to McDonnell Douglas Corporation. Rocket nozzle liner construction. 3,826,708, Cl. 161-162.000.

DeSio, Frederick Carl; and Werner, Walter Myers, to AMP Incorporated. High voltage electrical connector. 3,826,860, Cl. 174-73.0sc.

Detert, Ernst-Rolf; and Buchholz, Wilhelm, to Gerlach, Eduard, GmbH Chemische Fabrik. Envelope for tobacco goods. 3,826,268, Cl. 131-140.00c.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See—*
Illigen, Alfred; and Neugebauer, Walter, 3,826,814.

Deutsche Gold-und Silber-Scheideanstalt vormals-Roessler: *See—*
Posselt, Klaus; and Offermanns, Heribert, 3,826,838.

Dey, Arabinda N., to Mallory, P. R., & Co., Inc. Seals of the Li/So_2 organic electrolyte cells. 3,826,687, Cl. 136-133.000.

Dhez, Pierre: *See—*
Jaegle, Pierre; Carillon, Antoine; Dhez, Pierre; Jamelot, Gerard; Sureau, Alain; Cukier, Michel; Dupeyrat, Monique; and Vogel, Claudine, 3,826,996.

Diamond, Julius; Douglas, George H.; and Burns, Bernard J. 1-Substituted bibuanides as gastrointestinal spasmolytic agents. 3,826,843, Cl. 424-326.000.

Dick, A. B., Company: *See—*
Bischoff, Vincent E.; and Keur, Robert I., 3,827,057.

Dickerson, Linwood: *See—*
Allen, Eulalie H.; Allen, Earnest R.; and Dickerson, Linwood, 3,826,160.

Dickinson, Robert H., to Valassis, George F., & Company. Printed sheet containing user folded envelope with coin pocket. 3,826,422, Cl. 229-68.00r.

Dickson, Robert E.: *See—*
Inamorato, Jack T.; and Dickson, Robert E., 3,826,759.

Diebler, Herman G.: *See—*
Smythe, William J.; Bellinger, S. Lawrence; Diebler, Herman G.; and Dannewitz, Robert, 3,826,615.

Diehl, Robert Eugene; and Walworth, Bryant Leonidas, to Amercian Cyanamid Company. Method of controlling undesirable plant species using 3-nitropyridines. 3,826,643, Cl. 71-94.000.

Dietz, Earl D., to Owens-Illinois, Inc. Tooth filling and facing compositions comprising a radiopaque glass and method of making the same. 3,826,778, Cl. 260-42.470.

Dimyan, Magid: *See—*
Della Torre, Edward; and Dimyan, Magid, 3,827,035.

Directional Industries, Incorporated: *See—*
Ruggles, Kay, 3,826,206.
Doepfner, Wolfgang, to Sandoz Ltd. Inhibition of gastrointestinal alcers with calcitonin. 3,826,824, Cl. 424-112.000.
Dole Refrigerating Company: *See—*
Fischer, Harry C., 3,826,101.
Dolgoff, Jordan A.: *See—*
Levaco, Robert M.; and Dolgoff, Jordan A., 3,826,852.
Doll, Brendan L.: *See—*
Currie, Grover C.; and Doll, Brendan L., 3,826,165.
Donelly Mirrors, Inc.: *See—*
Baumgardner, John D.; and Ebeling, Dorothy J., 3,826,562.
Dornaus, Thomas F. Secured air reserve system. 3,826,156, Cl. 74-527.000.
Dorschner, Kenneth P.: *See—*
Bordenca, Carl; Johnson, Robert P.; and Dorschner, Kenneth P., 3,826,842.
Douglas, George H.: *See—*
Diamond, Julius; Douglas, George H.; and Burns, Bernard J., 3,826,843.
Dourian, Vincent J.; and Bassett, William M., to New Concepts Co., Inc. Power tool attachment. 3,826,046, Cl. 51-170.0-l.
Dow Chemical Company, The: *See—*
Roberts, Charles B.; and Brower, Frank M., 3,826,820.
Wessels, Glenn R., 3,826,144.
Dow Corning Corporation: *See—*
Holinski, Rudiger; and Schanzer, Oswald, 3,826,744.
Dow Jones & Company, Inc.: *See—*
Pittis, Bertram H.; and Cipas, Albert, 3,826,191.
Dowd, James Patrick; and Hunter, James C., to Napko Corporation. Fungus resistant composition. 3,826,825, Cl. 424-145.000.
Downing, Robert D.; and Wiley, Emmett H., to General Electric Company. Distributively banded reflector surface for producing contoured illumination intensity. 3,826,913, Cl. 240-103.00r.
Draugelis, Vaidevutis C.; Tsilibes, George N.; and Vineski, John E., to Xerox Corporation. Fusing apparatus. 3,826,892, Cl. 219-216.000.
Drum, Edward W.: *See—*
Scharfenberger, James A.; and Drum, Edward W., 3,826,425.
Drum Engineering Co., Limited: *See—*
Schmitz, Lothar Peter, 3,826,597.
D.T. & G. (Desings, Tools & Gauges) Limited: *See—*
Allison, Stanley Watson, 3,826,227.
Du Pont de Nemours, E. I., and Company: *See—*
Friend, Lindsay Carlton, 3,827,005.
Heuvel, Milike Vanden; and Thelissen, Will, 3,827,004.
Du Rocher, Gideon A.; and Miller, Ellsworth S., to Essex International, Inc. Terminating of electrical conductors. 3,826,000, Cl. 29-630.00r.
Dubin, Robert R.; Mowrey, William L.; and Gilhooley, William A., to General Electric Company. Sealed primary sodium-halogen battery. 3,826,685, Cl. 136-83.00r.
Dubuque Awning & Tent Company: *See—*
Frommelt, Cyril P.; and Frommelt, Sylvan J., 3,826,049.
Duerr, Dennis C. Photographic plate printer. 3,826,572, Cl. 366-93.000.
Duffey, Thomas E.; and Coleman, William R., to Pet Chemicals, Incorporate. Composition and method for the control of fleas on domesticated animals. 3,826,232, Cl. 119-157.000.
Duggan, Jack, to Fire Devices Manufacturing Limited. Fire detector. 3,827,012, Cl. 337-320.000.
Dugger, Richard P., to Ristance Wire, Inc. Space heating system and structure. 3,826,891, Cl. 219-213.000.
Dukelow, Donald A.; Hunter, Phillip B.; and King, Robert J., to United States Steel Corporation. Method of obtaining low-phosphorus contents in medium-and high-carbon steels in a bottom-blown oxygen steelmaking furnace. 3,826,647, Cl. 75-60.000.
Dummerfield, Francis; and Unthank, Alexander. Valves. 3,826,461, Cl. 251-7.000.
Duncan, Farris N.: *See—*
Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., 3,826,420.
Dunkelmann, Guenter: *See—*
Dehnert, Johannes; and Dunkelmann, Guenter, 3,826,800.
Dupeyrat, Monique: *See—*
Jaegle, Pierre; Carillon, Antoine; Dhez, Pierre; Jamelot, Gerard; Sureau, Alain; Cukier, Michel; Dupeyrat, Monique; and Vogel, Claudine, 3,826,996.
Dyce, John W.: *See—*
Fairbairn, Leroy W.; and Dyce, John W., 3,827,007.
Dyjak, Richard C., to United States of America, Navy. Magnetic mine detonator system. 3,826,215, Cl. 114-221.00r.
Dynalysis of Princeton: *See—*
Kelly, Arnold J., 3,826,978.
Eades, George S.: *See—*
Knapp, Charles F.; and Eades, George S., 3,826,019.
East, Donald, to Weil, Burt. One man multi-level cart. 3,826,528, Cl. 296-20.000.
Eastman Kodak Company: *See—*
Bissonette, Vernon L., 3,826,652.
Borel, Robert J.; Foote, James C., Jr.; and Warren, Horace G., 3,826,655.
Csontos, Michael W., 3,826,566.
Glover, Edward Charles Timothy Samuel, 3,826,228.
Greco, Edgar Joseph; and Wylot, James Matthew, 3,826,661.
Jenkins, Philip W.; Heseltine, Donald W.; and Mee, John D., 3,826,656.
Spaller, Albert E., Jr.; and Stockbridge, Bruce W., 3,826,163.
Weiss, George Raymond; and Helling, John Oliver, 3,826,654.
Wylot, James Matthew; and Greco, Edgar Joseph, 3,826,660.
Eastwood, H. Keith: *See—*
Plough, Charles T.; Tvedt, Jan Otto; Arts, Marcus; Eastwood, H. Keith; and Woo, Frank, 3,826,924.
Eaton Corporation: *See—*
Hantack, Melvin E., 3,826,605.
Ebeling, Dorothy J.: *See—*
Baumgardner, John D.; and Ebeling, Dorothy J., 3,826,562.
Eberle, George F. Truss fabricating machine. 3,826,188, Cl. 100-100.000.
Echerd, Beno E.: *See—*
Liptak, Neil R.; and Echerd, Beno E., 3,826,337.
Eckert, Edwin Joseph, to Caterpillar Tractor Company. Toric seal, noncircular section. 3,826,506, Cl. 277-92.000.
Ecodyne Corporation: *See—*
Short, James L., 3,826,761.
Ecolo-Tech, Inc.: *See—*
Warren Fred E., Jr.; Fling, Kenneth F.; and Moore, Gary R., 3,826,437.
Economics Laboratory, Inc.: *See—*
Boraas, Stan L. C.; and Nystuen, Marcus I., 3,826,113.
Edgerton, Bradford W.: *See—*
Rigney, Edward T.; Benson, Richard A.; and Edgerton, Bradford W., 3,826,321.
Edmunds, George W.: *See—*
Hoppman, Kurt H.; and Edmunds, George W., 3,826,405.
Eggers, Paul J. Method and apparatus for treatment of hemorrhoids. 3,826,242, Cl. 128-1.00r.
Eichelberger, Charles W.: *See—*
Garratt, Philip M.; and Eichelberger, Charles W., 3,826,983.
Eichelberger, Charles W.; and Garratt, Philip M., to General Electric Company. Highly stable precision voltage source. 3,826,969, Cl. 323-19.000.
Eicher, Gerald J.: *See—*
Penn, William H.; and Eicher, Gerald J., 3,826,879.
Elder, Boyd B., to Del Mar Engineering Laboratories. Exercise treadmill. 3,826,491, Cl. 272-69.000.
Elektro-Ion, Inc.: *See—*
Jensen, Frederick K., 3,826,540.
Elkins, Vance V., Jr. Method of fitting golfer with putter and improving putting accuracy. 3,826,495, Cl. 273-32.00r.
Elliott, William A. Ground engaging unit for ballast tamping machines. 3,826,025, Cl. 37-142.00r.
Elmet, Inc.: *See—*
Woods, Jack L.; and Pittman, Tobe A., 3,826,723.
Elson, Robert E.; Heminger, Raymond D.; and Tully, Geoffrey R., Jr., to United States of America, Atomic Energy Commission. Stabilized uranyl nitrate compositions and uranium impregnation method. 3,826,753, Cl. 252-301.10r.
Eltro GmbH, & Co.: *See—*
Friedl, Wolfgang, 3,826,992.
Emerson, Galo P. Locking device. 3,826,114, Cl. 70-14.000.
Emhart Corporation: *See—*
Kulig, Constantine W.; and Campbell, Lyman L., 3,826,381.
EMI Limited: *See—*
Hutton, Henry James; and Thompson, Alan, 3,826,600.
Enfield Industrial Engines Limited: *See—*
Nossiter, Clarence Frank, 3,826,219.
Engelhard Minerals & Chemicals Corporation: *See—*
Mercade, Venancio V., 3,826,365.
Engineering Technology Analysts, Inc.: *See—*
Lovie, Peter M., 3,826,099.
English, Richard A.: *See—*
Lamb, Jimmy W.; and English, Richard A., 3,826,104.
Enjolras, Christian; Gautier, Pierre; and Billy, Emile, to Etablissements J. J. Carnaud & Forges de Basse-Indre. Easy opening end. 3,826,403, Cl. 220-54.000.
Epple, Richard, to Licentia Patent-Verwaltungs-G.m.b.H. Measuring device for the dynamic measurement of semiconductor parameters and method of making such a device. 3,826,984, Cl. 324-158.00p.
Epstein, Sheldon L.; and Wessling, Bernard W., to Brunswick Corporation. Electrochemical electrodes. 3,826,686, Cl. 136-120.00f.
Erickson, John R.; and Hillstrom, William A., to United States of America, Agriculture. Process for removing bark from wood chips. 3,826,433, Cl. 241-14.000.
Erlich, Melvin P.; Stoller, Milton; Grand, Stanley; and De Cote, Robert, to Nuclear Research Associates, Inc., mesne. Biological cell analyzing system. 3,826,899, Cl. 235-92.0pc.
Erste Deutsche Floatglas GmbH & Co.OHG: *See—*
Classen, Franz, 3,826,636.
ESB Incorporated: *See—*
Raddi, William J.; and Johnson, Robert William, 3,826,246.
Eschbaugh, John T., to Parker-Hannifin Corporation. Quick connect tube coupling joint. 3,826,523, Cl. 385-39.000.
Essex International, Inc.: *See—*
Du Rocher, Gideon A.; and Miller, Ellsworth S., 3,826,000.
Essiet, Okon A. Process for extracting a proteinaceous sweetening agent from dioscoreophyllum cumminsii berries employing high speed homogenization and U.V. irradiation. 3,826,795, Cl. 260-112.00r.
Esso Research and Engineering Company: *See—*
Brois, Stanley J., 3,826,797.

Root, Glenn M.; Root, Ronald G.; Parenti, Alvin L.; and Sullivan, Arthur J., 3,825,965.
Ryer, Jack; and Renard, Remi H., 3,826,745.
Etablissements J. J. Carnaud & Forges de Basse-Indre: *See—*
Enjolras, Christian; Gautier, Pierre; and Billy, Emile, 3,826,403.
Ethyl Corporation: *See—*
Jarema, Chester P.; and Niebylski, Leonard M., 3,826,303.
Wilder, Harry D.; and Kinsley, Homan B., Jr., 3,826,067.
Evans Medical Limited: *See—*
Ross, Charles Forbes, 3,826,221.
Evans, Philip Henry; and Lane, Norman, to BSR Limited. Automatic record players. 3,826,504, Cl. 274-15.00r.
Fabrique de Machines Andre Bechler S.A.: *See—*
Simonin, Jean-Claude; and Badoux, Jean-Daniel, 3,826,161.
Factory Mutual Research Corporation: *See—*
Yao, Cheng, 3,826,313.
Fairbairn, Leroy W.; and Dyce, John W., to Bendix Corporation, The. Hermaphroditic electrical connector with front releasable and rear removable electrical contacts. 3,827,007, Cl. 339-49.00r.
Fairbank, William M.: *See—*
Day, Edmund P.; Fairbank, William M.; and Opfer, James E., 3,826,972.
Farbenfabriken Bayer Aktiengesellschaft: *See—*
Timmler, Helmut; Buchel, Karl-Heinz; and Plempel, Manfred, 3,826,837.
Farley, Brian. Lifting device. 3,826,392, Cl. 214-672.000.
Faust, Elbert R., to Buehler Corporation, The. Continuous plating system. 3,826,355, Cl. 198-220.0ba.
Faust, Henry H.; and Faust, Peter J. Dentures and teeth for dentures and methods of making the same. 3,826,002, Cl. 32-2.000.
Faust, Peter J.: *See—*
Faust, Henry H.; and Faust, Peter J., 3,826,002.
Fenixova, Raisa Vasilievna: *See—*
Kvesitadze, Georgy Ivanovich; Kokonashvili, Georgy Nikolaevich; and Fenixova, Raisa Vasilievna, 3,826,716.
Fergusson, Ian Douglas, to BP Chemicals International Limited. Spraying apparatus. 3,826,428, Cl. 239-222.110.
Ferranti Limited: *See—*
Colaco, Stephen Francis, 3,827,034.
Fest, Otto. Time delay relay. 3,826,955, Cl. 317-141.00s.
Festner, Theodor. Electrostatic agglomeration apparatus. 3,826,063, Cl. 55-128.000.
Fetner, Martin J.; and Hunsicker, Glenn L., to Bethlehem Steel Corporation. Device for producing a visual display of the transverse tension profile of a moving steel strip. 3,826,132, Cl. 73-143.000.
F'Geppert, Erwin, to United States of America, Army. Power train. 3,826,151, Cl. 74-400.000.
Fiat Societa per Azioni: *See—*
Anselmino, Giovanni, 3,826,933.
Peruglia, Marco, 3,826,542.
Fibreboard Corporation: *See—*
Morse, Hugh B.; and Foster, Thomas W., 3,826,421.
Filer, Burt K., to Process Industries, Incorporated. Magnetic coupling for motor driven pumps and the like. 3,826,938, Cl. 310-104.000.
Finck, Patricia A., to Colgate-Palmolive Company. Non-phosphate automatic dishwasher detergent. 3,826,748, Cl. 252-99.000.
Fincor, Inc.: *See—*
Bucek, Jiri B.; and Shultz, James R., 3,826,928.
Finefrock, Donald W., to Johnson Rubber Company, The. Water lubricated rubber bearing. 3,826,547, Cl. 308-238.000.
Finley, James, to Hanlo Gage and Engineering Company. Adjustable indicator gaging unit. 3,826,010, Cl. 33-169.00r.
Fiorella, John J. Citrus fruit peels for alcoholic berages. 3,826,855, Cl. 426-175.000.
Fire Devices Manufacturing Limited: *See—*
Duggan, Jack, 3,827,012.
Firestone Tire & Rubber Company, The: *See—*
Claxton, William E.; and Hollow, James E., 3,826,902.
Fischer, Adolf, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Herbicide. 3,826,642, Cl. 71-91.000.
Fischer, Erhard. Double bend stranded wire making machine. 3,826,072, Cl. 57-58.570.
Fischer, Harry C., to Dole Refrigerating Company. Plate defrosting system utilizing defrosting liquid from a vehicle engine. 3,826,101, Cl. 62-82.000.
Fisher, Julian Vernon, to Illinois Tool Works, Inc. Plastic fastener. 3,826,458, Cl. 248-239.000.
Fisher, Thomas W., to Bethlehem Steel Corporation. Atmosphere controlled annealing process. 3,826,693, Cl. 148-12.100.
Fishman, Walter, to Leeds & Northrup Company. Temperature controlled for controlling both heating and cooling. 3,826,305, Cl. 165-26.000.
Flaig, Ulrich, to Bosch, Robert, G.m.b.H. Electronic shift command system for motor vehicle automatic transmission. 3,826,158, Cl. 74-866.000.
Fleischer, Kurt: *See—*
Michels, Alfred; and Fleischer, Kurt, 3,826,677.
Fleischmann, Erwin: *See—*
Hiersig, Heinz M.; Hansgen, Klaus; and Fleischmann, Erwin, 3,826,218.
Fleming, James Evans, to Air Land Systems Company. Method and apparatus for effecting jump hunting in step-by-step telephone switching systems. 3,826,874, Cl. 179-18.0ha.
Fling, Kenneth F.: *See—*
Warren Fred E., Jr.; Fling, Kenneth F.; and Moore, Gary R., 3,826,437.
Flouret, George Rogelio, to Abbott Laboratories. Protected decapeptide derivatives of gonadotropin releasing hormone. 3,826,794, Cl. 260-112.500.
Floyd, Roger M.: *See—*
Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., 3,826,420.
Flume Stabilization Systems, Inc.: *See—*
Pangalila, Frans V. A., 3,826,212.
FMC Corporation: *See—*
Cayton, David W., 3,826,293.
Goodley, George F., 3,826,443.
Scribner, Frank F., 3,826,267.
Thomas, James Larue; and Beacham, Harry Hoyt, 3,826,777.
Wright, Carl Leonard; and Beacham, Harry Hoyt, 3,826,786.
Foldes, Peter, to RCA Corporation. Adjustable polarization antenna system. 3,827,051, Cl. 343-176.000.
Follansbee Steel Corporation: *See—*
Weiss, Maurice A., 3,826,205.
Folmar, Reginald J., to Barber-Colman Company. Dovetailed stator structure. 3,826,941, Cl. 310-217.000.
Fong, William: *See—*
Broadway, Alexander Richard William; Fong, William; and Rawcliffe, Gordon Hindle, 3,826,960.
Foote, James C., Jr.: *See—*
Borel, Robert J.; Foote, James C., Jr.; and Warren, Horace G., 3,826,655.
Forest, Joseph G.; and Czarnetzky, Edward J., to International Stock Food Corporation. Feed supplement for hoofed animals. 3,826,827, Cl. 424-164.000.
Forman, Henry Ronald, to International Nickel Company, Inc., The. Carbonyl pellet decomposer. 3,826,225, Cl. 118-48.000.
Forster, Karl-Heinz; Vetter, Lothar; and Stange, Helmut, to VEB Polygraph Leipzig. Control apparatus and method for transporting sheets. 3,826,487, Cl. 271-57.000.
Foster, Colin E.; and Lally, Joseph E., to Bally Manufacturing Corporation. Lock-out ball bumper switch. 3,826,883, Cl. 200-61.110.
Foster, Thomas W.: *See—*
Morse, Hugh B.; and Foster, Thomas W., 3,826,421.
Fournier, Paul w., to Universal Oil Products company. Liquid-solids contacting chamber with spherical strainer means. 3,826,375, Cl. 210-291.000.
Fowler, Gene Roger; and Anderson, Sidney Elmer, to Deere & Company. Paddle-type conveyor. 3,826,350, Cl. 198-82.000.
Fox, William R.: *See—*
Rowe, Edgar R.; and Fox, William R., 3,826,404.
Frank, Raymond W.; and Kralovec, William M., to Sta-Rite Industries, Inc. Plastic pump construction. 3,826,589, Cl. 415-170.00a.
Frank, Rudiger, to Leybold-Heracus-Verwaltung GmbH. Turbomolecular vacuum pump. 3,826,588, Cl. 415-90.000.
Frank, William N. Collapsible beach tote barrow with ball combination. 3,826,511, Cl. 280-36.00r.
Franke, Edward Louis, Jr.: *See—*
Bleinberger, Warren Edward; Franke, Edward Louis, Jr.; Galloway, John Vernon; Richardson, George William; Thomas, Albert Richard; and Thomas, Palmer Doyle, 3,826,690.
Franklin, James W. Truss system. 3,826,057, Cl. 52-641.000.
Franklin, James W. Truss System. 38,256,057, Cl. 52-641.000.
Frassica, James J., to Bard, C. R., Inc. double seal closure plug. 3,826,396, Cl. 215-234.000.
Freese, Gary P., to Caterpillar Tractor Company. Semi-automatic hydraulic chain adjuster. 3,826,149, Cl. 74-242.800.
Frei, Arthur: *See—*
Preisig, Roland; and Frei, Arthur, 3,826,348.
Freudenberg, Carl, Firma: *See—*
Heling, Wilhelm; and Hordt, Harald, 3,826,676.
Freudenschuss, Otto: *See—*
Bockenhuber, Karl; Freudenschuss, Otto; and von Belvard, Peter Revy, 3,826,567.
Freyberger, Alex: *See—*
Berndt, Alvin W.; and Freyberger, Alex, 3,826,408.
Friedl, Wolfgang, to Eltro GmbH, & Co. Device for amplification of a coherent optical signal. 3,826,992, Cl. 330-4.300.
Friedman, Arthur S.: *See—*
Gavin, Thomas W.; and Friedman, Arthur S., 3,826,519.
Friend, Lindsay Carlton, to Du Pont de Nemours, E. I., and Company. Electrical connector. 3,827,005, Cl. 339-258.00p.
Frisque, Alvin J.: *See—*
Anderson, Donald R.; and Frisque, Alvin J., 3,826,771.
Froehlich, Alfred; Tschopp, Paul; and Beuschel, Werner, to Ciba-Geigy AG. Process for crosslinking hydrophilic colloids using traizine derivatives. 3,826,788, Cl. 260-91.3va.
Fromme, Firma, GmbH: *See—*
Fromme, Hans-Georg, 3,826,351.
Fromme, Hans-Georg, to Fromme, Firma, GmbH. Tray conveyor. 3,826,351, Cl. 198-127.00r.
Frommelt, Cyril P.; and Frommelt, Sylvan J., to Dubuque Awning & Tent Company. Loading dock shelter with independently movable head curtain. 3,826,049, Cl. 52-173.000.
Frommelt, Sylvan J.: *See—*
Frommelt, Cyril P.; and Frommelt, Sylvan J., 3,826,049.
Fruehauf Corporation: *See—*
Schwartz, Robert B.; Banerjea, Tara N.; and Stinson, Donald B., Jr., 3,826,050.

Fuji Photo Film Co., Ltd.: *See—*
Satomura, Masato, 3,826,784.
Takagi, Akira; and Kuroki Motoharu, 3,826,416.
Fuji Sokuryoki Seizo Kabushiki Kaisha: *See—*
Senshu, Haruzo; Koenuma, Masao; and Gibu, Yoshitaka, 3,826,007.
Fujikaura Cable Works, Ltd., The: *See—*
Yokokawa, Chikao, 3,826,789.
Fujimori, Masao; and Nakajima, Shigeo, to Taiheyo Coal Mining Co., Ltd. Coal planer automatic reversing device. 3,826,535, Cl. 299-1.000.
Fujisawa, Kei-Ichi: *See—*
Kawaguchi, Hiroshi; Fujisawa, Kei-Ichi; Tsukiura, Hiroshi; and Konishi, Masataka, 3,826,802.
Fujitsu Limited: *See—*
Hara, Toshito; Tanaka, Hiroaki; and Shimosato, Shoichi, 3,826,886.
Funfstuck, Horst, to Statham Instruments, Inc. Electrodes employing disposable electropads for cardiac instruments. 3,826,245, Cl. 128-2.06e.
Funk, Laurence L. Lap-joining recording tape splicer. 3,826,705, Cl. 156-505.000.
Furukawa, Motoaki: *See—*
Matsushita, Shigeo; Ueki, Atsufumi; and Furukawa, Motoaki, 3,827,000.
Fuzzell, Joe E.: *See—*
Anderson, Arlynn W.; Coleman, Donald F.; Fuzzell, Joe E.; Greiner, Jonny R.; and Miller, Robert G., 3,827,024.
Gabriels, Andre Joseph Christian. Projectile launchers to be mounted on the muzzle of a fire-arm. 3,826,031, Cl. 42-1.00f.
Gage, John M.; Shaw, Robert F.; and Stoft, Paul E., to Shaw, Robert F. Electrically heated surgical cutting instrument. 3,826,263, Cl. 128-303.100.
Galkin, Pavel Vladimirovich; and Rudenko, Nikolai Antonovich. Method for inserting weft in shuttleless looms. 3,826,289, Cl. 139-127.00r.
Galloway, John Vernon: *See—*
Bleinberger, Warren Edward; Franke, Edward Louis, Jr.; Galloway, John Vernon; Richardson, George William; Thomas, Albert Richard; and Thomas, Palmer Doyle, 3,826,690.
Gangloff, Wilmer C., Jr.: *See—*
Conrad, Joseph D., Jr.; Gangloff, Wilmer C., Jr.; and Luongo, Michael C., 3,826,094.
Conrad, Joseph D., Jr.; and Gangloff, Wilmer C., Jr., 3,826,095.
Gardner, Richard A.; and Wilcox, David L., to International Business Machines Corporation. Process for the preparation of mullite by a solid state reaction. 3,826,813, Cl. 423-328.000.
Garfield, Gerald; and Rout, Cecil H., to McDonnell Douglas Corporation. Deep narrow gap welding torch. 3,826,888, Cl. 219-74.000.
Garfield, Lawrence A.: *See—*
Boyd, James; Garfield, Lawrence A.; Hanninen, Clifford; and Maki, Eugene, 3,826,536.
Boyd, James; Garfield, Lawrence A.; Hanninen, Clifford; and Maki, Eugene, 3,826,537.
Garratt, Philip M.: *See—*
Eichelberger, Charles W.; and Garratt, Philip M., 3,826,969.
Garratt, Philip M.; and Eichelberger, Charles W., to General Electric Company. Digitally scaled digital voltmeter. 3,826,983, Cl. 324-99.00d.
Garrison, Harry F. Vehicle washing apparatus. 3,826,269, Cl. 134-123.000.
Gautier, Pierre: *See—*
Enjolras, Christian; Gautier, Pierre; and Billy, Emile, 3,826,403.
Gavin, Thomas W.; and Friedman, Arthur S. Telephone pad. 3,826,519, Cl. 281-15.000.
Gaynor, Josepah: *See—*
Jacobs, John H.; Corrigan, Richard A.; and Gaynor, Josepah, 3,826,653.
Gebhard, Manfred; Nitzsche, Curt; and Pfeffer, Simon, to Metallgeseschaft Aktiengesellschaft. Adhesive for bonding elastomers to metallic and nonmetallic substrates. 3,826,772, Cl. 260-31.2mr.
Gebr. Hofmann KG.: *See—*
Muller, Richard, 3,826,146.
Gehap Gesellschaft fur Handel und Patentverwertung MbH & Co., KG: *See—*
Schweikart, Horst, 3,826,925.
Geist, Thomas N.: *See—*
Ballas, George C.; and Geist, Thomas N., 3,826,068.
Gelin, Robert J., to Owens-Corning Fiberglas Corporation. Pulling wheel construction. 3,826,418, Cl. 226-190.000.
Gellekink, Bernard: *See—*
Van Staaden, Cornelis Augustinus; Bodmer, Maximiliaan Hubert; Van Hijfte, Herman Michel; and Gellekink, Bernard, 3,827,049.
Geller, Sidney B., to United States of America, Commerce. Universal dropout tester for magnetic storage media. 3,826,975, Cl. 324-34.0ta.
Gendrot, Andre Jean-Claude. Method and device for recorded audio-visual programming. 3,827,080, Cl. 360-80.000.
General Dynamics Corporation: *See—*
Green, Eugene D., 3,826,807.
Toney, Philip A.; and Bowers, John O., Jr., 3,827,044.
General Electric Company: *See—*
Anderson, Albert W., 3,826,959.
Barron, Mark B.; and Butler, Walter J., 3,825,996.
Cech, Robert E., 3,826,696.
Cooke, Richard C., Jr., 3,826,773.
Cushing, Donald S.; and Jenkins, Thomas E., 3,826,553.
Downing, Robert D.; and Wiley, Emmett H., 3,826,913.
Dubin, Robert R.; Mowrey, William L.; and Gilhooley, William A., 3,826,685.
Eichelberger, Charles W.; and Garratt, Philip M., 3,826,969.
Garratt, Philip M.; and Eichelberger, Charles W., 3,826,983.
Grossman, Leonard N.; Kaznoff, Alexis I.; and Clukey, Howard V., 3,826,754.
Hall, Robert N., 3,826,721.
Hammer, Edward E.; and Paynter, John, 3,826,946.
Horvay, Julius B.; and Schumacher, Frank A., 3,826,102.
Hurko, Bohdan; and Kills, Raymond L., 3,826,898.
Kingsley, Jack D.; and Prener, Jerome S., 3,826,679.
Kurz, Bruno; Barron, Mark B.; and Butler, Walter J., 3,825,995.
Leach, Robert D., 3,826,934.
Linko, Peter J.; and Treece, William D., 3,825,984.
Mc Laughlin, Michael H.; Walmet, Gunnar E.; and Corman, James C., 3,826,957.
Nash, Dudley O.; and Lyons, Charles S., 3,826,088.
Pensabene, Saverio F., 3,826,684.
Raboin, Robert G., 3,826,592.
Richards, John C., 3,826,586.
Smuland, Robert J.; and Ward, Richard K., 3,826,082.
General Foods Corporation: *See—*
Marulich, Anthony J., 3,826,829.
General Motors Corporation: *See—*
Brandon, Harold J.; and Spicer, Wilson C., 3,826,083.
Hay, Charles N., 3,826,546.
Gentili, Bruno: *See—*
Horowitz, Robert M.; and Gentili, Bruno, 3,826,856.
Gentilini, Augusto. Bicycle toy wich can be either manually operated or remote controlled by means of a wire control or by radio control. 3,826,038, Cl. 46-96.000.
Gerlach, Eduard, GmbH Chemische Fabrik: *See—*
Detert, Ernst-Rolf; and Buchholz, Wilhelm, 3,826,268.
Gertsch AG, mesne: *See—*
Smolka, Thomas Gordon, 3,826,509.
Getefo Gesellschaft fur technischen Fortschritt m.b.H.: *See—*
Oeser, Konrad, 3,826,481.
Gibson, William: *See—*
Martin, Byron W.; and Gibson, William, 3,826,203.
Gibu, Yoshitaka: *See—*
Senshu, Haruzo; Koenuma, Masao; and Gibu, Yoshitaka, 3,826,007.
Gilbert, Verne E.: *See—*
Gilbert, Verne E.; and Silverman, Arnold B. (said Silverman assor. to said), 3,826,717.
Gilbert, Verne E.; and Silverman, Arnold B., said Silverman assor. to said Gilbert, Verne E. Quantitative antibiotic test container. 3,826,717, Cl. 195-103.50r.
Gilhooley, William A.: *See—*
Dubin, Robert R.; Mowrey, William L.; and Gilhooley, William A., 3,826,685.
Gilman, Robert W., to California Pellet Mill Company. Deflector and impeller combination. 3,826,475, Cl. 259-14.000.
Giolitti, Nicolo; Bovio, Michele; and Dalmasso, Claudio, to Olivetti, Ing., C., & C., S.p.A. Electric keyboards for office machines. 3,826,882, Cl. 200-5.00a.
Giolitti, Nicolo; and Bovio, Michele, to Olivette, Ing., C., & C., S.p.A. Non-import printing device for electronic calculators. 3,826,915, Cl. 346-74.00e.
Giori, Francis A.; and Topolski, Alvin S., to Medtronic, Inc. Mechanical pulse generator for cardiac pacer. 3,826,265, Cl. 128-419.00p.
Glass, Marvin, & Associates: *See—*
Kisko, Harry; Hicks, Alan A.; and Morrison, Howard J., 3,826,039.
Glazer, Burton G.; and Bittner, Michael A., to United States of America, Navy. Method and means for obtaining radio bearings. 3,827,050, Cl. 343-102.000.
Glorioso, Paul A., to TRW Inc. Single phase T-R unit. 3,826,893, Cl. 219-98.000.
Glover, Edward Charles Timothy Samuel, to Eastman Kodak Company. Surface application processing device. 3,826,228, Cl. 118-255.000.
Gobels, Georg. Laryngoscope. 3,826,248, Cl. 128-11.000.
Godard, Gerard: *See—*
Moulin, Louis; Confino, Maurice; and Godard, Gerard, 3,826,822.
Godfrey, Vern L.; and Clark, Bill D. Bale handling machine. 3,826,389, Cl. 214-152.000.
Godsey, Frank W., Jr., to Bio-Medical Sciences, Inc. Apparatus for use in liquid sample analysis. 3,826,734, Cl. 204-299.000.
Godzicki, Martin M.: *See—*
Horn, Harold E.; and Godzicki, Martin M., 3,826,857.
Golden Cycle Corporation: *See—*
Wilson, Harold W., 3,826,750.
Goodley, George F., to FMC Corporation. Strap dispensing apparatus. 3,826,443, Cl. 242-105.000.
Goodman, David M. High-sensitivity beam-index and heaterless cathode ray tubes. 3,826,867, Cl. 178-5.40f.
Goodrich, B. F., Company, The: *See—*
Antlfinger, George J.; and Von Kamp, Harold E., 3,826,669.
Goodrich, Robert S.: *See—*
Johnson, Richard W.; and Goodrich, Robert S., 3,826,480.
Goodyear Aerospace Corporation: *See—*

Stewart, Eugene E., 3,826,576.
Goodyear Tire & Rubber Company, The: *See*—
Madigan, Basil M., 3,826,109.
Gouge, Wilfred A., Sr.: *See*—
Kohls, Frederick J.; Boldt, Bruce W.; and Gouge, Wilfred A., Sr., 3,826,743.
Gould, Wilbur J.: *See*—
Ruskin, Asa P.; and Gould, Wilbur J., 3,826,247.
Grace, W. R., & Co.: *See*—
Hoffman, Gordon H.; and Brundrett, Charles Philipp, 3,826,758.
Weber, Charles H.; and Pickard, John E., 3,826,651.
Graceffo, Joseph A. Dental prophylaxis instrument. 3,826,004, Cl. 32-58.000.
Graf, Peter, to Siemens Aktiengesellschaft. Holographic memory with flexible light conducting fibers. 3,826,556, Cl. 350-3.500.
Grand, Stanley: *See*—
Erlich, Melvin P.; Stoller, Milton; Grand, Stanley; and De Cote, Robert, 3,826,899.
Grantham, Rodney E., to United States of America, Navy. Magnetohydrodynamic generator for ballistic missiles. 3,826,451, Cl. 244-1.0ss.
Grapha Maschinenfabrik Muller, Hans AG: *See*—
Muller, Hans, 3,826,706.
Grau, Gerhard, to Zinser-Textilmaschinen GmbH. Apparatus for opening silvers of textile fibers. 3,826,071, Cl. 57-56.000.
Greasley, Cecil Henry. Conveyors. 3,826,353, Cl. 198-139.000.
Greco, Edgar Joseph: *See*—
Wylot, James Matthew; and Greco, Edgar Joseph, 3,826,660.
Greco, Edgar Joseph; and Wylot, James Matthew, to Eastman Kodak Company. High index optical glass. 3,826,661, Cl. 106-53.000.
Green, Eugene D., to General Dynamics Corporation. Method of diffusion molding. 3,826,807, Cl. 264-29.000.
Green, Willard B., Jr.: *See*—
Woodilla, John E., Jr.; Hunt, Gordon W.; and Green, Willard B., Jr., 3,826,694.
Greer, William J.: *See*—
Winston, James F.; Greer, William J.; and Steele, Malcolm S., 3,826,976.
Gregg, David W., to United States of America, Atomic Energy Commission. Laser pulse tailoring method and means. 3,826,561, Cl. 350-204.000.
Greiner, Jonny R.: *See*—
Anderson, Arlynn W.; Coleman, Donald F.; Fuzzell, Joe E.; Greiner, Jonny R.; and Miller, Robert G., 3,827,024.
Grierson, Keith J.; and Samuelson, Bruce E., to Whirlpool Corporation. Motor housing construction for a vacuum cleaner with strain-relief for motor leads. 3,826,935, Cl. 310-71.000.
Grimes, John Herbert; Scott, Kenneth Thomas Bartlett; and McKenna, Norman James, to United Kingdom Atomic Energy Authority. Process for precipitating metal-containing compounds as gel-particles dispersed in aqueous phase. 3,826,755, Cl. 252-301.10s.
Groovfold, Inc.: *See*—
Cornell, Richard R., 3,826,554.
Grossman, Leonard N.; Kaznoff, Alexis I.; and Clukey, Howard V., to General Electric Company. Chemical immobilization of fission products reactive with nuclear reactor components. 3,826,754, Cl. 252-301.10r.
Groswith, Charles T., III: *See*—
Abildgaard, William H.; and Groswith, Charles T., III, 3,825,963.
Groswith, Charles T., III; and Buan, Danilo P., to Velo-Bind, Inc. Device and method for casing books. 3,825,964, Cl. 11-3.000.
Groswith, Charles T., III; and Buan, Danilo P., to Velo-Bind, Inc. Power-operated, multi-die punch. 3,826,168, Cl. 83-203.000.
Grounds, Harry C.; and Otto, Eugene W. Convertible chair for fisherman and campers. 3,825,962, Cl. 9-7.000.
Grover, Philip D. Appliance defrosting system and switch means. 3,826,103, Cl. 62-140.000.
Grunewald, Ernst, to Hobart Manufacturing Company, The. Trash compactor and bag system. 3,826,189, Cl. 100-229.00a.
Grylicki, Miroslaw; Nadachowski, Franciszek; and Pawlowski, Stanislaw, to Instytut Materialow Ogniotrwalych. Method of manufacturing high fireproof aluminous cement. 3,826,664, Cl. 106-104.000.
Grzech, Joseph Leonard. Ski boot cleaning device. 3,826,022, Cl. 36-2.5al.
GTE Sylvania Incorporated: *See*—
Bowes, Robert J.; and Miller, John J., 3,826,947.
Susi, A. Frederick, 3,826,873.
Guadagni, Dante G.; and Buttery, Ron G. Process for enhancing fresh tomato flavor in tomato products. 3,826,851, Cl. 426-65.000.
Gueldenpfennig, Klaus; Pommerening, Uwe A.; and Russell, Stanley L., to Stromberg-Carlson Corporation. Message waiting and do-not-disturb. 3,826,876, Cl. 179-84.00c.
Gugliotta, George: *See*—
King, Gordon J.; and Gugliotta, George, 3,826,578.
Gulf & Western Industries, Inc.: *See*—
Seipp, William H., 3,827,030.
Gundlach, Arnold: *See*—
Kuhlmann, Franz; Gundlach, Arnold; and Seiffert, Horst, 3,826,204.
Gunther, Roland E. Thorn and splinter pullers. 3,826,264, Cl. 128-303.100.
Gutterman, Kirill Davidovich: *See*—
Brukovsky, Igor Pavlovich; Yakolvlev, Pavel Borisovich; and Gutterman, Kirill Davidovich, 3,826,889.
Gwozdz, Joseph W., to McKinney Manufacturing Company. Adjustable door hinge containing coil spring. 3,825,973, Cl. 16-189.000.
Haarkotter, Hermann: *See*—
Brand, Werner; and Haarkotter, Hermann, 3,826,507.
Hagan, Robert M. Spring swing. 3,826,492, Cl. 272-85.000.
Hahm, Gerhard Herbert. Axially telescoping package carrier for the treatment of thread and yarn. 3,826,444, Cl. 242-118.110.
Hakka, Leo Ernest, to Union carbide Canada Limited. Sulphur removal from natural gas. 3,826,811, Cl. 423-229.000.
Haley, John S.: *See*—
Cooper, Jerry W.; and Haley, John S., 3,826,288.
Halfhill, Martin O., to Information Storage Systems, Inc. Smooth wave electrical generator. 3,826,927, Cl. 307-263.000.
Hall, Dallas P.; and Yoldas, Bulent E., to Owens-Illinois, Inc. Glass melting. 3,826,635, Cl. 65-134.000.
Hall, Edwin A., Jr., 40% interest to Hermanns, William H. and 20% interest to Hermanns, Mildred. Mobile ring toywith relatively moveable seat elements positioned therein. 3,826,488, Cl. 272-57.00t.
Hall, Everett J. Venturi windshield wiper blade. 3,825,966, Cl. 15-250.040.
Hall, Robert N., to General Electric Company. Method of forming lithium-doped germanium bodies by electrodeposition in a fused lithium electrolyte. 3,826,721, Cl. 204-39.000.
Halter, John C. Combination ski lock and safety strap. 3,826,510, Cl. 280-11.37k.
Hammarlund, Per Erik: *See*—
Karlsson, Gosta; Samuelsson, Per; and Hammarlund, Per Erik, 3,826,646.
Hammarlund, Richard C.: *See*—
Motus, Ulo; and Hammarlund, Richard C., 3,826,154.
Hammer, Edward E.; and Paynter, John, to General Electric Company. Vapor discharge lamp electrode having carbon-coated areas. 3,826,946, Cl. 313-218.000.
Hammond, Donald L., to Hewlett-Packard Company. Dual crystal resonator apparatus. 3,826,931, Cl. 310-8.100.
Hanlo Gage and Engineering Company: *See*—
Finley, James, 3,826,010.
Hanna, Daniel C.: *See*—
Welter, Jeff R., 3,825,969.
Hanninen, Clifford: *See*—
Boyd, James; Garfield, Lawrence A.; Hanninen, Clifford; and Maki, Eugene, 3,826,536.
Boyd, James; Garfield, Lawrence A.; Hanninen, Clifford; and Maki, Eugene, 3,826,537.
Hansen, Gunnar Lyshoj; and Christensen, Rolf, to Danfoss A/S. Rotary piston machine with splined internal shaft. 3,826,596, Cl. 418-61.00b.
Hansen, Ib Schreiner. Spring actuated device for projecting clay pigeons. 3,826,238, Cl. 124-8.000.
Hansgen, Klaus: *See*—
Hiersig, Heinz M.; Hansgen, Klaus; and Fleischmann, Erwin, 3,826,218.
Hantack, Melvin E., to Eaton Corporation. Direct burner ignition system. 3,826,605, Cl. 431-66.000.
Hara, Katsuyuki: *See*—
Ohya, Shogo; Hara, Katsuyuki; Takagi, Momoyoshi; and Kurokawa, Masao, 3,826,704.
Hara, Toshito; Tanaka, Hiroaki; and Shimosato, Shoichi, to Fujitsu Limited. Contact material. 3,826,886, Cl. 200-266.000.
Hardick, Aldin; House, Delbert; and Martin, Alvin M., to Questor Corporation. Latch installation machine. 3,825,988, Cl. 29-208.00r.
Hardwick, Bruce Alfred; and Patterson, John Howard, to Oil Shale Corporation(Australia), The. Leaching of metal values from various ores. 3,826,809, Cl. 423-61.000.
Harnischfeger Corporation: *See*—
Melvin, Raymand C., 3,826,894.
Harris, Ernest S.: *See*—
Horton, Ray E.; Harris, Ernest S.; and Leffel, Granville P., 3,826,585.
Harris, Ewell J. Fish lure. 3,826,033, Cl. 43-42.500.
Harris, Thomas Sanders, Jr.: *See*—
Schoggen, Howard Leon; Holmgren, John Richard; and Harris, Thomas Sanders, Jr., 3,826,711.
Hart, H. W., Mfg. Co.: *See*—
Hart, Harold W.; and Hart, Warren H., 3,826,467.
Hart, Harold W.; and Hart, Warren H., to Hart, H. W., Mfg. Co. Extendible watering system for fowls. 3,826,467, Cl. 251-284.000.
Hart, Warren H.: *See*—
Hart, Harold W.; and Hart, Warren H., 3,826,467.
Hasegawa, Shiro: *See*—
Suekane, Mikio; Kanno, Mutsuo; and Hasegawa, Shiro, 3,826,714.
Hashimotoso Kabushiki Kaisha: *See*—
Okuda, Toshio, 3,826,272.
Hass, Fritz: *See*—
Pelet, Pierre A.; Bouyssounouse, Bernard; and Hass, Fritz, 3,826,167.
Hasselbeck, Richard J., to Stolle Corporation, The. Wall ironing tool pack with redraw die. 3,826,123, Cl. 72-349.000.
Hautau, Charles F.: *See*—
Stewart, T. Dale; Stewart, Thomas D.; and Hautau, Charles F., 3,826,198.
Stewart, T. Dale; Stewart, Thomas D.; and Hautau, Charles F., 3,826,199.
Stewart, T. Dale; Stewart, Thomas D.; and Hautau, Charles F., 3,826,200.

Stewart, T. Dale; Stewart, Thomas D.; and Hautau, Charles F., 3,826,201.

Havstad, Harold R.; and Deidrich, Donald F., to Hudson Oxygen Therapy Sales Company. Intermitten positive pressure breathing manifold. 3,826,255, Cl. 128-194.000.

Hay, Charles N., to General Motors Corporation. Self-adjusting thrust bearing assembly. 3,826,546, Cl. 308-234.000.

Hayakawa, Koji: *See—*
Noma, Tetsuo; Hayakawa, Koji; Nagao, Osamu; Okano, Ichizo; Teramoto, Ryuzo; Kurihara, Tomomichi; Nakano, Kenji; and Okamoto, Tomiyasu, 3,826,399.

Hayase, Shunichiro; Shima, Seiya; Ando, Takeki; Kuroha, Hiroaki; and Kurosawa, Toshiaki, to Hitachi, Ltd. Device for controlling speed of DC motor. 3,826,961, Cl. 318-308.000.

Hayashi Toshikazu. Ventilation fan system with smoke detector speed control. 3,826,180, Cl. 98-43.000.

Health Products, Inc.: *See—*
Bailey, James D., 3,826,259.

Heath, Ronald Alfred: *See—*
Thomas, Alan; and Heath, Ronald Alfred, 3,826,143.

Heberlein & Co. AG.: *See—*
Sick, Uwe, 3,826,112.

Heckrodt, William F., to Presto Products Incorporated. Plastic bag dispenser system. 3,826,361, Cl. 206-409.000.

Heidenhain, Johannes, Dr.: *See—*
Baumgartner, Alfons, 3,826,318.

Hein, Daniel: *See—*
De Lavalette, Pierre de Lacroix; Hein, Daniel; Boudet, Georges; Meyer, Jean-Claude; Neron, Alain; Biaunier, Alain; Blaiberg, Alain; Nouveau, Jean Louis; Charpentier, Jacques Georges; and Jacquot, Alain, 3,825,982.

Heinz, Martin: *See—*
Ziegler, Karl; Breil, Heinz; Holzkamp, Erhard; and Heinz, Martin, 3,826,792.

Heinzer, Paul, to Battelle Memorial Institute. Method of recording and reproducing information in the form of electrical conductivity differences. 3,826,573, Cl. 355-133.000.

Heitman, Joseph Beckwith, to Pennwalt Corporation. Method for making anhydrous alkali metal hydrosulfites. 3,826,818, Cl. 423-515.000.

Helding, Norman A., to Sun Chemical Corporation. Shutter mechanism for radiation-curing lamp. 3,826,014, Cl. 34-1.000.

Hele, Harry Arthur. Le.. mechanism. 3,826,571, Cl. 355-46.000.

Heling, Wilhelm; and Hord' ...eld, to Freudenberg, Carl, Firma. Water vapor impermeable ... age casing material. 3,826,676, Cl. 117-76.00t.

Helling, John Oliver: *See—*
Weiss, George Raymond; and Helling, John Oliver, 3,826,654.

Helmer, Clas Erik: *See—*
Soderberg, Rolf Harald; and Helmer, Clas Erik, 3,826,649.

Heminger, Raymond D.: *See—*
Elson, Robert E.; Heminger, Raymond D.; and Tully, Geoffrey R., Jr., 3,826,753.

Hemmings, Norman. Tyre shredding machine. 3,826,166, Cl. 83-132.000.

Henderson, Bee. Fountain liquid applicator. 3,826,581, Cl. 401-197.000.

Hennig, Don B. Boot scraper for application to a ski. 3,826,518, Cl. 280-11.13t.

Henrick, Clive A.; and Siddall, John B., to Zoecon Corporation. Aliphatic substituted 2,4..diene acids and esters. 3,826,804, Cl. 260-399.000.

Henriquez, Theodore A.; and Tims, Allan C., to United States of America, Navy. Piezoelectric transducer having good sensitivity over a wide range of tempeature and pressure. 3,827,023, Cl. 340-10.000.

Hentges, Howard N. Collapsible ice fishing house. 3,826,270, Cl. 135-4.00r.

Herek, Edward W. Fishing hook assembly. 3,826,034, Cl. 43-44.830.

Hermanns, Mildred: *See—*
Hall, Edwin A., Jr., 3,826,488.

Hermanns, William H.: *See—*
Hall, Edwin A., Jr., 3,826,488.

Herskind, Richard E., to United States of America, Air Force. Reentry vehicle stripline slot antenna. 3,827,054, Cl. 343-708.000.

Heseltine, Donald W.: *See—*
Jenkins, Philip W.; Heseltine, Donald W.; and Mee, John D., 3,826,656.

Heth, Sherman C.: *See—*
Hoffmeyer, Knud H.; and Heth, Sherman C., 3,826,530.

Heuvel, Milike Vanden; and Thelissen, Will, to Du Pont de Nemours, E. I., and Company. Circuit board pin. 3,827,004, Cl. 339-221.00r.

Hewlett-Packard Company: *See—*
Band, Ian T.; and Mac Leod, Kenneth J., 3,826,901.
Hammond, Donald L., 3,826,931.

Heymann, Bernard R., to Conair, Inc. Pressure regulator for hydraulic shock absorbers. 3,826,343, Cl. 288-282.000.

Hicks, Alan A.: *See—*
Kisko, Harry; Hicks, Alan A.; and Morrison, Howard J., 3,826,039.

Hicks, Burton G. Segmented candle. 3,826,606, Cl. 431-295.000.

Hiersig, Heinz M.; Hansgen, Klaus; and Fleischmann, Erwin, to Mannesmann-Meer Aktiengesellschaft. Combination drive for ships. 3,826,218, Cl. 115-34.00r.

Higgins, Frank, to Summit Filter Corporation. Souble-wall filter bag construction. 3,826,066, Cl. 55-379.000.

Higginson, Bernard E., to Beneke Division, Beatrice Foods Co. Self-raising seat. 3,825,958, Cl. 4-240.000.

Hill, Charles E., to Avco Corporation. Gain stabilized signal processing circuitry for ground resistance sensor. 3,826,929, Cl. 307-308.000.

Hill, Thomas Burton, Jr.; and Pendrey, Arthur Legrand, to Salem Sand and Gravel Company. Apparatus for photographing pipeline interiors. 3,827,068, Cl. 354-63.000.

Hillmann, Willi, to Wahle, Paul, KG. Bus bar connection. 3,827,006, Cl. 339-21.00r.

Hillstrom, William A.: *See—*
Erickson, John R.; and Hillstrom, William A., 3,826,433.

Hilsinger Corporation, The: *See—*
Wenzel, Ronald Arthur, 3,826,565.

Hilti Aktiengesellschaft: *See—*
Maier, Elmar, 3,825,989.

Hirai, Michihiro; and Shimizu, Toyokazu, to Parke, Davis & Company. Enteric capsules. 3,826,666, Cl. 106-128.000.

Hirai, Yoshiyuki: *See—*
Takeshita, Yasuhiro; Uoi, Michitake; Hirai, Yoshiyuki; and Uchiyamay, Mitsuru, 3,826,760.

Hiromachi, Akihisa. Apparatus for playing a game of golf. 3,826,501, Cl. 273-176.00a.

Hirsch, Jacob. Sail hank. 3,826,211, Cl. 114-114.000.

Hiseler, Stanley Robert: *See—*
Johnson, Earl C.; and Hiseler, Stanley Robert, 3,826,295.

Hitachi, Ltd.: *See—*
Hayase, Shunichiro; Shima, Seiya; Ando, Takeki; Kuroha, Hiroaki; and Kurosawa, Toshiaki, 3,826,961.

Hitachi Shipbuilding and Engineering Company, Ltd.: *See—*
Noma, Tetsuo; Hayakawa, Koji; Nagao, Osamu; Okano, Ichizo; Teramoto, Ryuzo; Kurihara, Tomomichi; Nakano, Kenji; and Okamoto, Tomiyasu, 3,826,399.

Hitchcock, Arleigh C., to Shaw-Walker Company, The. Ganging Chairs. 3,826,453, Cl. 297-248.000.

Hobart Manufacturing Company, The: *See—*
Grunewald, Ernst, 3,826,189.

Hoeber, Gerhard; and Landwehrkamp, Hans, to Schubert & Salzer Maschinenfabrik Aktiengesellschaft. Rotatable sliding-thread clamp for textile machines. 3,826,073, Cl. 57-77.330.

Hoerenz, Peter G.; and Ludl, Helmut, to Carl Zeiss-Stiftung and d/b/a Zeiss, Carl. Digital data imaging system. 3,827,070, Cl. 354-105.000.

Hoffman, Allan S.; and Schmer, Gottfried, to United States of America, Atomic Energy Commission. Method for preparation of biocompatible and biofunctional materials and product thereof. 3,826,678, Cl. 117-81.000.

Hoffman, Gordon H.; and Brundrett, Charles Philipp, to Grace, W. R., & Co. Method of preparing exhaust catalyst. 3,826,758, Cl. 252-455.00r.

Hoffmeyer, Knud H.; and Heth, Sherman C., to Jacobsen Manufacturing Company. Riding tractor. 3,826,530, Cl. 296-65.00r.

Hogan, James A., to Honeywell Inc. Process controller having electronic manual control. 3,826,991, Cl. 330-1.00a.

Hohage, Klaus Albert: *See—*
Schnell, Gunter; and Hohage, Klaus Albert, 3,826,169.

Holder, Otis W., to Oakdale Knitting Company. Yarn feeding and control means for circular knitting machine. 3,826,110, Cl. 66-9.00r.

Holinski, Rudiger; and Schanzer, Oswald, to Dow Corning Corporation. Lubricant for high temperature, non-chip metal forming. 3,826,744, Cl. 252-23.000.

Holliday, Harley J. Phase lock-loop frequency synthesizer. 3,826,994, Cl. 331-11.000.

Hollmann, Elmer. Swinging rain gauge. 3,826,135, Cl. 73-171.000.

Hollow, James E.: *See—*
Claxton, William E.; and Hollow, James E., 3,826,902.

Holman, Danny F.: *See—*
Kocache, Riad M.A.; and Holman, Danny F., 3,826,974.

Holmgren, John Richard: *See—*
Schoggen, Howard Leon; Holmgren, John Richard; and Harris, Thomas Sanders, Jr., 3,826,711.

Holstein & Kappert Maschinenfabrik Phonix GmbH: *See—*
Rademacher, Friedrich, 3,826,294.

Holzkamp, Erhard: *See—*
Ziegler, Karl; Breil, Heinz; Holzkamp, Erhard; and Heinz, Martin, 3,826,792.

Honeywell Inc.: *See—*
Hogan, James A., 3,826,991.

Honeywell Information Systems Inc.: *See—*
MacGregor, William W., 3,826,872.
Viswanathan, G.R., 3,827,026.

Hooker Chemical Corporation: *See—*
Schultz, Robert F.; and Cook, Edward H., Jr., 3,826,731.
Schultz, Robert F.; Cook, Edward H., Jr.; and 364203, 3,826,732.
Schultz, Robert F.; and Cook, Edward H., Jr., 3,826,733.

Hoover, Merwin Frederick; Sinkovitz, Gloria Dimarco; and Schaper, Raymond Joseph, to Calgon Corporation. Anionic dextran graft copolymers. 3,826,767, Cl. 260-17.4gc.

Hoppman, Kurt H.; and Edmunds, George W., to Hoppmann Corporation. Method of orienting articles. 3,826,405, Cl. 221-1.000.

Hoppmann Corporation: *See—*
Hoppman, Kurt H.; and Edmunds, George W., 3,826,405.

Hordt, Harald: *See—*
Heling, Wilhelm; and Hordt, Harald, 3,826,676.

Horikoshi, Koki; Ikeda, Yonosuke; and Tanaka, Yoshitake, to Rikagaku Kenkyusho. Novel amylase and process for preparing the same. 3,826,715, Cl. 195-66.00r.

Horn, Harold E.; and Godzicki, Martin M., to CPC International Inc. Hard Candy. 3,826,857, Cl. 426-214.000.

Hornschuch, Hanns; and Krouse, Leroy M., to Ingersoll-Rand Company. Gas compressor. 3,826,594, Cl. 417-245.000.

Hornschunch, Hanns, to Ingersoll-Rand Company. Centrifugal gas compressor unit. 3,826,587, Cl. 415-60.000.

Horowitz, Robert M.; and Gentili, Bruno, to United States of America, Agriculture. Dihydrochalcone xylosides and their use as sweetening agents. 3,826,856, Cl. 426-213.000.

Horton, Ray E.; Harris, Ernest S.; and Leffel, Granville P., to Northrop Corporation. Dual head drill device. 3,826,585, Cl. 408-41.000.

Horvay, Julius B.; and Schumacher, Frank A., to General Electric Company. Refrigerator including automatic ice maker and water reservoir. 3,826,102, Cl. 62-137.000.

Hosaka, Iwao; and Yokota, Yuji, to Canon Kabushki Kaisha and Canon Denshi Kabushiki Kaisha. Magnetic head wherein an erasing head is perpendicular to a record-reproduce gap. 3,827,083, Cl. 360-121.000.

Hougen, Gary A.; and Kloc, Henry F., to Continental Can Company, Inc. Safety overcap for easy opening container. 3,826,400, Cl. 220-29.000.

Hougen, Gary A.; and Kloc, Henry F., to Continental Can Company, Inc. Non-detachable easy opening container. 3,826,402, Cl. 220-48.000.

House, Delbert: *See—*
Hardick, Aldin; House, Delbert; and Martin, Alvin M., 3,825,988.

Hovasse, Christian; and Allemnd, Pierre, to Rhone-Progil. Setting and hardening of aluminous cement. 3,826,665, Cl. 106-104.000.

Howell, Hilda,; and Kutz, Walter M., to Koppers Company, Inc. Self-extinguishing polymer compositions containing brominated aryl butanes. 3,826,766, Cl. 260-2.5fp.

Howmedica, Inc.: *See—*
Blackwood, Jack R., 3,826,262.

Hoyt, Hazen L., III: *See—*
Bevis, Paul A.; Hoyt, Hazen L., III; Miner, Thomas E.; Kuypers, Norbert T.; and Kuypers, Norbert T., 3,827,072.

Hruda, Robert M.; and De Haven, Howard E., to Westinghouse Electric Corporation. Electrodeless lamp igniter system. 3,826,950, Cl. 315-267.000.

Hrusch, Louis C. Fluid power drive system. 3,826,096, Cl. 60-709.000.

Hubach, Louis E., to Tyler, W. S. Incorporated. Grain cleaner. 3,826,367, Cl. 209-243.000.

Huber, Frank W.: *See—*
Branstrom, Bruce R.; and Huber, Frank W., 3,826,084.

Huber, John Richard, to Trans Technology Corporation, mesne. Slidable buckle assembly. 3,826,473, Cl. 254-164.000.

Hudson, Frederick W., to Xerox Corporation. Sheet transport system. 3,826,568, Cl. 355-3.000.

Hudson Oxygen Therapy Sales Company: *See—*
Havstad, Harold R.; and Deidrich, Donald F., 3,826,255.

Huebner, Charles Ferdinand, to Ciba-Geigy Corporation. 8-Benzofurylmethyl-1,3,8-triazaspiro (4,5)decanes as neuroleptics. 3,826,835, Cl. 424-267.000.

Hughes Aircraft Company: *See—*
Pastor, Richardo C.; and Pastor, Antonio C., 3,826,817.
Wong, Shi-Yin, 3,826,757.

Hulett, Henry R.: *See—*
Bonner, William A.; Sweet, Richard G.; and Hulett, Henry R., 3,826,364.

Humphries, Darral V., to Bethlehem Steel Corporation. Process for laminating phosphate coated steel with ABS resin. 3,826,709, Cl. 161-217.000.

Hunsicker, Glenn L.: *See—*
Fetner, Martin J.; and Hunsicker, Glenn L., 3,826,132.

Hunt, Gordon W.: *See—*
Woodilla, John E., Jr.; Hunt, Gordon W.; and Green, Willard B., Jr., 3,826,694.

Hunter, George Dwight, to Deere & Company. Coupling device. 3,826,517, Cl. 280-511.000.

Hunter, James C.: *See—*
Dowd, James Patrick; and Hunter, James C., 3,826,825.

Hunter, Konald Arthur, to Delamere & Williams Company. Bag making and filling machine. 3,826,061, Cl. 53-182.000.

Hunter, Phillip B.: *See—*
Dukelow, Donald A.; Hunter, Phillip B.; and King, Robert J., 3,826,647.

Hunter, Robert R. Anti-fogging device for eye sheilds. 3,825,953, Cl. 2-14.00k.

Hurko, Bohdan; and Kills, Raymond L., to General Electric Company. Border treatment of composite metal plate surface heating unit. 3,826,898, Cl. 219-462.000.

Hussey, Charles E., Jr.: *See—*
De Corso, Serafino M.; Hussey, Charles E., Jr.; and Ambrose, Michael J., 3,826,080.

Hutter, Wilhelm, to Becker & Van Hullen Niederrheinische Maschinenfabrik. Apparatus for pressing chipboard panels. 3,826,601, Cl. 425-338.000.

Hutton, Henry James; and Thompson, Alan, to EMI Limited. Apparatus for the production of Gramophone records with labels attached thereto. 3,826,600, Cl. 425-123.000.

Hyden Hans Olof: *See—*
Anton, Per; and Hyden Hans Olof, 3,826,366.

Ichiba, Terumichi; Shimba, Hiroshi; and Mukunashi, Hiroaki, to Sumitomo Electric Industries Ltd. Laminate tape and laminate sheathed cable having an ehtylene/glycidyl adhesive. 3,826,862, Cl. 174-102.00r.

Ichikawa, Kiyoshi: *See—*
Suzuki, Isamu; Nakahara, Yasuji; Ichikawa, Kiyoshi; and Osonoi, Kaoru, 3,826,768.

ICN Pharmaceuticals, Inc.: *See—*
Tolman, Richard L.; and Smith, Clive W., 3,826,803.

Idemitsu Kosan Co., Ltd.: *See—*
Takeshita, Yasuhiro; Uoi, Michitake; Hirai, Yoshiyuki; and Uchiyamay, Mitsuru, 3,826,760.

Ihaya, Kazuhiko, to Canon Camera Kabushiki Kaisha. Method of producing a photoconductive cell. 3,826,683, Cl. 117-212.000.

Ike, Ernest C., to Wiz Corporation. Vehicle brake. 3,826,176, Cl. 92-25.000.

Ikeda, Hirotaka: *See—*
Murata, Kazuo; Ikeda, Hirotaka; Ashida, Katsuzi; and Sato, Uichi, 3,826,369.

Ikeda, Yonosuke: *See—*
Horikoshi, Koki; Ikeda, Yonosuke; and Tanaka, Yoshitake, 3,826,715.

Ikegawa, Kiyohiro, to Kurimoto Iron Works, Ltd. Tuyere for a melting furnace. 3,826,479, Cl. 266-41.000.

Illigen, Alfred; and Neugebauer, Walter, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Process of making a finely divided silicic acid having reducing properties. 3,826,814, Cl. 3-28-72.

Illinois Tool Works, Inc.: *See—*
Fisher, Julian Vernon, 3,826,458.
McClung, Robert A.; and Pliml, Frank V., Jr. (said Pliml assor. to said), 3,826,424.

Imperatrix: *See—*
Compere-Whitney, Alicia L., 3,826,308.

Imperial Chemical Industries Limited: *See—*
Ashworth, Brian Thomas; Crawford, Kenneth; and Quan, Peter Michael, 3,826,779.
Waring, David Richard, 3,826,799.

Inaba, Eisaku: *See—*
Sawazaki, Hajime; Sakai, Kiyohide; Tsutsumi, Hiroshi; Sumitomo, Yasusuke; Niwa, Kazuo; and Inaba, Eisaku, 3,826,699.

Inamorato, Jack T.; and Dickson, Robert E., to Colgate-Palmolive Company. Low-foaming detergent compositions. 3,826,759, Cl. 252-525.000.

Industrie-Automation GmbH & Co.: *See—*
Pusch, Gunter, 3,826,130.

Information Storage Systems, Inc.: *See—*
Halfhill, Martin O., 3,826,927.

Ingersoll-Rand Company: *See—*
Hornschuch, Hanns; and Krouse, Leroy M., 3,826,594.
Hornschunch, Hanns, 3,826,587.

Ingles, William R., 1/2 to American Medical International, Inc. X-ray film cassette holder. 3,826,922, Cl. 250-471.000.

Inman, Harold W.; Surletta, Zygmunt M.; and Klicki, Chester E., to Siegler, Lear, Inc. box spring. 3,825,960, Cl. 5-247.000.

Instytut Materialow Ogniotrwalych: *See—*
Grylicki, Miroslaw; Nadachowski, Franciszek; and Pawlowski, Stanislaw, 3,826,664.

Integrated Memories, Inc.: *See—*
Abbott, Warwick R.; and Chen, Theodore C., 3,827,032.

Interbath, Inc.: *See—*
Zieger,Claus D., 3,826,454.

International Biophysics Corporation: *See—*
Watanabe, Hideo; and Leonard, John E., 3,826,730.

International Business Machines Corporation: *See—*
Antipov, Igor; and Melzer, Paul Albin, 3,826,698.
Bringol, Charles Ronald, 3,826,965.
Gardner, Richard A.; and Wilcox, David L., 3,826,813.

International Harvester Company: *See—*
Packard, Norman M., 3,826,508.

International Nickel Company, Inc., The: *See—*
Forman, Henry Ronald, 3,826,225.

International Standard Electric Corporation: *See—*
Behenna, Joshua John; and Phipps, Graham Harold George, 3,826,945.

International Stock Food Corporation: *See—*
Forest, Joseph G.; and Czarnetzky, Edward J., 3,826,827.

International Telephone and Telegraph Corporation: *See—*
Marsteller, Kenneth E., 3,826,105.
Marsteller, Kenneth E., 3,826,107.

International Telephone and Telegraph Corporation, mesne: *See—*
Brown, Albert William, 3,826,273.

Investors in Ventures, Inc.: *See—*
Bucalo, Louis, 3,826,241.

Ionics, Incorporated, mesne: *See—*
Capuano, Italo A., 3,826,614.
Capuano, Italo A., 3,826,618.

Ipco Hospital Supply Corporation, mesne: *See—*
Classe, Anthony V.; and Mehn, Robert P., 3,826,229.

Irwin, Charles P., to Commercial Electronics, Inc. Gas analyzing apparatus. 3,826,577, Cl. 356-201.000.

Ishii, Harukichi: *See—*
Berliner, Emanuel R.; and Ishii, Harukichi, 3,826,559.

Ito, Kenji: *See—*
Shimauchi, Shiro; Minemura, Norihiro; Matsui, Takeshi; Ito, Kenji; Shima, Takeo; Kawase, Shoji; and Oshima, Masataka, 3,826,609.

ITT Industries, Inc.: *See—*

Thiel, Rudolf; and Lauterwasser, Armin, 3,826,175.
Ivashin, Victor S., to National Cash Register Company, The. Kynamic comparison tester for go-no-go testing of digital circuit packages in normal environment. 3,826,909, Cl. 235-153.0ac.
Iwasaki, Shingi; and Obata, Kiyoshi, to Rio Co., Ltd. High voltage generating device. 3,826,952, Cl. 317-81.000.
Iwase, Yoshitaka: *See—*
Mori, Toyoshi; and Iwase, Yoshitaka, 3,826,939.
Jackson, C. D., Manufacturing, Inc.: *See—*
Jackson, Carl D., 3,826,209.
Jackson, Carl D., to Jackson, C. D., Manufacturing, Inc. Landscaping apparatus with seed dispenser. 3,826,209, Cl. 111-8.000.
Jacobs, John H.; Corrigan, Richard A.; and Gaynor, Josepah, to Bell & Howell Company. Photographic developing system and method. 3,826,653, Cl. 96-50.00r.
Jacobsen Manufacturing Company: *See—*
Hoffmeyer, Knud H.; and Heth, Sherman C., 3,826,530.
Jacobson, Clayton J. Self-righting power-driven aquatic vehicle. 3,826,220, Cl. 115-70.000.
Jacquot, Alain: *See—*
De Lavalette, Pierre de Lacroix; Hein, Daniel; Boudet, Georges; Meyer, Jean-Claude; Neron, Alain; Biaunier, Alain; Blaiberg, Alain; Nouveau, Jean Louis; Charpentier, Jacques Georges; and Jacquot, Alain, 3,825,982.
Jaegle, Pierre; Carillon, Antoine; Dhez, Pierre; Jamelot, Gerard; Sureau, Alain; Cukier, Michel; Dupeyrat, Monique; and Vogel, Claudine, to Agence National de Valorisation de la Recherche ANVAR. Method of obtaining a medium having a negative absorption coeficient in the X-ray and ultraviolet spectral range and a laser for the practical application of said method. 3,826,996, Cl. 331-94.500.
Jagicza, Laszlo: *See—*
Mandzsu, Jozsef; Jagicza, Laszlo; Peter, Attila; Kellner, Laszlo; and Jodal, Sandor, 3,827,042.
Jaiser: *See—*
Bockenhuber, Karl; Freudenschuss, Otto; and von Belvard, Peter Revy, 3,826,567.
Jakob, Hans, to American Safety Equipment Corporation. Multiple point buckle. 3,825,979, Cl. 24-205.190.
Jamelot, Gerard: *See—*
Jaegle, Pierre; Carillon, Antoine; Dhez, Pierre; Jamelot, Gerard; Sureau, Alain; Cukier, Michel; Dupeyrat, Monique; and Vogel, Claudine, 3,826,996.
Janssen, Robert I. Paint roller frame with spray shield and clean-up means. 3,825,970, Cl. 15-230.110.
Janzen, Peter: *See—*
Whittaker, Stanley James; Astill, Cyril J.; and Janzen, Peter, 3,826,465.
Jarema, Chester P.; and Niebylski, Leonard M., to Ethyl Corporation. Apparatus for casting molten metal/foaming agent compostion. 3,826,303, Cl. 164-335.000.
Jasinski, Raymond J.; and Trachtenberg, Isaac, to United States of America, Interior, mesne. Determination of sulfate using ferric ion-selective electorde. 3,826,971, Cl. 204-1.00t.
Javan, Ali; and Levine, Jeffrey Steven, to Massachusetts Institute of Technology. Laser pumped by photoionization generated, electrically heated plasma. 3,826,997, Cl. 331-94.560.
Jeffries, James Frederick, Jr.: *See—*
Bratu, Nicholas George, Jr.; and Jeffries, James Frederick, Jr., 3,826,619.
Jenkins, Cecil: *See—*
Woolslayer, Homer J.; and Jenkins, Cecil, 3,826,472.
Jenkins, Genelle: *See—*
Crawford, Beverley; and Jenkins, Genelle, 3,826,231.
Jenkins, Philip W.; Heseltine, Donald W.; and Mee, John D., to Eastman Kodak Company. Fogged, direct positive silver halide emulsion sensitized with a cyanine dye containing hetercylic nitrogen atom substituted with an -OR group. 3,826,656, Cl. 96-100.000.
Jenkins, Thomas E.: *See—*
Cushing, Donald S.; and Jenkins, Thomas E., 3,826,553.
Jensen, Frederick K., to Elektro-Ion, Inc. Powder hopper for electrostatic posder spraying apparatus. 3,826,540, Cl. 302-57.000.
Jentzsch, Harald: *See—*
Koster, Wolfgang; and Jentzsch, Harald, 3,826,417.
Jewett, Warren R. Method and apparatus for treating multi-phase systems. 3,826,740, Cl. 210-19.000.
Jodal, Sandor: *See—*
Mandzsu, Jozsef; Jagicza, Laszlo; Peter, Attila; Kellner, Laszlo; and Jodal, Sandor, 3,827,042.
Johnson, Arthur R., to Oak Industries Inc. Subscription television system using audio and video carrier reversal. 3,826,863, Cl. 178-5.100.
Johnson, Earl C.; and Hiseler, Stanley Robert, to Deere & Company. Felling head structure. 3,826,295, Cl. 144-34.00e.
Johnson, Edgar G., Jr.; and Cornelison, James J., to Micromedic Systems, Inc. Apparatus for transferring a liquid from one container to another. 3,826,621, Cl. 23-259.000.
Johnson, Richard W.; and Goodrich, Robert S. Multi-functional frictional-resistance apparatus. 3,826,480, Cl. 267-9.00b.
Johnson, Robert P.: *See—*
Bordenca, Carl; Johnson, Robert P.; and Dorschner, Kenneth P., 3,826,842.
Johnson, Robert William: *See—*
Raddi, William J.; and Johnson, Robert William, 3,826,246.
Johnson Rubber Company, The: *See—*
Finefrock, Donald W., 3,826,547.
Johnson Service Company: *See—*
Broker, David C.; and Wisniewski, Judith L., 3,826,284.
Jones & Laughlin Steel Corporation: *See—*
Winston, James F.; Greer, William J.; and Steele, Malcolm S., 3,826,976.
Jones, Bernard H.: *See—*
Sears, James H.; and Jones, Bernard H., 3,826,276.
Jones, Charles V.; Alvey, James W.; and Sanborn, Charles H., III, to Kellwood Company. Apparatus for cutting sheet material. 3,826,170, Cl. 83-657.000.
Jones, Hale M., to Ampex Corporation. Pneumatic tape rewind system. 3,826,446, Cl. 242-185.000.
Jones, Henry B.; and Bunn, Dorrance P., Jr., to Texaco Inc. Fluid catalytic cracking. 3,826,624, Cl. 23-288.00s.
Jones, Robert S., Jr.: *See—*
Jones, Robert S., Jr.; and Smathers, Harry W. (ssid Smathers assor. to said), 3,826,230.
Jones, Robert S., Jr.; and Smathers, Harry W., ssid Smathers assor. to said Jones, Robert S., Jr. and Jones, Wesley E. Flooring system for sties and other animal shelters. 3,826,230, Cl. 119-28.000.
Jones, Wesley E.: *See—*
Jones, Robert S., Jr.; and Smathers, Harry W., 3,826,230.
Kaar, James L. Guitar string. 3,826,171, Cl. 84-287.00s.
Kabel- und Metallwerke Gutehoffnungshutte Aktiengesellschaft: *See—*
Beck, August, 3,826,286.
Kabushiki Kaisha Dowa: *See—*
Miyahara, Kingo, 3,826,240.
Kabushiki Kaisha Mekik Seisakusho: *See—*
Kunogi, Mahito; and Tanikawa, Teruo, 3,826,477.
Kabushiki Kaisha Saneh: *See—*
Akabane, Katsumi; and Otsuka, Shogo, 3,826,430.
Kabushiki Kaisha Suwa Seikosha: *See—*
Maezawa, Shuji, 3,827,043.
Kabushiki Kaisha Tokai Rika Denki: *See—*
Mori, Toyoshi; and Iwase, Yoshitaka, 3,826,939.
Kabushiki Kaisha Yaskawa Kenki Seisakusho: *See—*
Nagasaka, Nagahiko; and Shinohara, Katsuji, 3,826,966.
Kabushikikaisha COPAL: *See—*
Wada, Yashuiro, 3,827,065.
Kaiser Aluminum & Chemical Corporation: *See—*
Sobolev, Igor; and Woycheshin, Elias A., 3,826,775.
Kalns, Arvids. Concrete slab forming machine with high extrusion capacity. 3,826,411, Cl. 222-235.000.
Kaneda, Masaki: *See—*
Kuroyama, Shigefumi; Kaneda, Masaki; and Tamura, Hiroshi, 3,826,015.
Kanno, Mutsuo: *See—*
Suekane, Mikio; Kanno, Mutsuo; and Hasegawa, Shiro, 3,826,714.
Karl, Walter, to Utilux Pty. Limited. Crimping tool. 3,825,986, Cl. 29-203.00d.
Karl, Walter; Rooney, Peter John; and Ulk, Alexander, to Utilux Pty., Limited. Terminal connectors for insulated conductors. 3,826,861, Cl. 174-84.00c.
Karlsson, Gosta; Samuelsson, Per; and Hammarlund, Per Erik. Method for treating melts and means for carrying out this treatment. 3,826,646, Cl. 75-13.000.
Karnes, George Thomas, to Shell Oil Company. Plug-displaced sand-packing process. 3,826,310, Cl. 166-276.000.
Kasakowski, Henry R.; and Washburn, Douglas J., to Bendix Corporation, The. Self calibrating digital to A.C. converter for multiple conversion. 3,827,047, Cl. 340-347.0da.
Kashio, Toshio, to Casio Computer Co., Ltd. Control means for information storage in a dynamic shift memory. 3,827,028, Cl. 340-172.500.
Kasprzak, David P.: *See—*
Bobzin, James E.; and Kasprzak, David P., 3,826,055.
Kaster, Robert L. Pivoting disc heart valve with rod guide. 3,825,956, Cl. 3-1.000.
Kaster, Robert L. Pivoting disc heart valve with rod guide. 3,825,957, Cl. 3-1.000.
Kastner, William D.; and Cobb, Gary W., to Texas Instruments Incorporated. Element select/replace apparatus for a vector computing system. 3,827,031, Cl. 340-172.500.
Kattner, Erich; and Bork, Klaus, to Siemens Aktiengesellschaft. Waste ink disposal means for spray printing devices. 3,826,192, Cl. 101-335.000.
Kaufmann, Albert R., to Nuclear Metals, Inc., mesne. Rotating gas jet apparatus for atomization of metal stream. 3,826,598, Cl. 425-7.000.
Kawaguchi, Hiroshi; Fujisawa, Kei-Ichi; Tsukiura, Hiroshi; and Konishi, Masataka, to Bristol-Myers Company. 4'-Deoxyanibutyrosin A&B. 3,826,802, Cl. 260-210.0ab.
Kawahara, Takashi: *See—*
Kawamura, Takuro; and Kawahara, Takashi, 3,826,943.
Kawamura, Takuro; and Kawahara, Takashi, to Nippon Electric Company, Limited. Camera tube of vidicon style comprising single high melting-point metal seal provided with support for target. 3,826,943, Cl. 313-383.000.
Kawase, Shoji: *See—*
Shimauchi, Shiro; Minemura, Norihiro; Matsui, Takeshi; Ito, Kenji; Shima, Takeo; Kawase, Shoji; and Oshima, Masataka, 3,826,609.
Kaznoff, Alexis I.: *See—*
Grossman, Leonard N.; Kaznoff, Alexis I.; and Clukey, Howard V., 3,826,754.

Keating, James L., to Paris American Corporation. End wrap dispenser. 3,826,407, Cl. 221-63.000.
Keeran, William C.: *See—*
Bailey, John J.; and Keeran, William C., 3,826,914.
Keith, Emerald Eugene, to Magnavox Company, The. Tube filament power supply. 3,826,989, Cl. 328-270.000.
Keller & Knappich Augsburg, Zweigniederlassung der Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft: *See—*
Richter, Hans, 3,826,383.
Keller, Wolfgang, to Siemens Aktiengesellschaft. Adjustable induction coil for heating semiconductor rods. 3,827,017, Cl. 336-62.000.
Kelley, James O.: *See—*
Propst, Robert L.; and Kelley, James O., 3,826,550.
Kellner, Ferdinand. Focusing lens lock for photographic cameras. 3,827,061, Cl. 354-195.000.
Kellner, Laszlo: *See—*
Mandzsu, Jozsef; Jagicza, Laszlo; Peter, Attila; Kellner, Laszlo; and Jodal, Sandor, 3,827,042.
Kellwood Company: *See—*
Jones, Charles V.; Alvey, James W.; and Sanborn, Charles H., III, 3,826,170.
Kelly, Arnold J., to Dynalysis of Princeton. Waveguide refractometer. 3,826,978, Cl. 324-58.50a.
Kent, John Scott: *See—*
O'Rourke, Anne Cecile; and Kent, John Scott, 3,826,823.
Ketterer, Roger A., to Cincinnati Incorporated. Reduction of slack in metal coil slitting lines. 3,826,120, Cl. 72-46.000.
Keur, Robert I.: *See—*
Bischoff, Vincent E.; and Keur, Robert I., 3,827,057.
Killinger, Fred M., to Upjohn Company. Vial and syringe combination. 3,826,260, Cl. 128-272.000.
Killinger, Fred M., to Upjohn Company. Vial and syringe assembly. 3,826,261, Cl. 10-25-72.
Kills, Raymond L.: *See—*
Hurko, Bohdan; and Kills, Raymond L., 3,826,898.
Kimberly-Clark Corporation: *See—*
Schwarz, Eckhard C. A., 3,826,674.
Kimbrell, James E.: *See—*
Chatters, Roy M.; Kimbrell, James E.; and Slater, Shelby D., 3,826,617.
Kimura, Toshio: *See—*
Tanaka, Shoichi; Kousaka, Susumu; and Kimura, Toshio, 3,826,298.
Kimura, Yoshimasa: *See—*
Sakamaki, Hisashi; and Kimura, Yoshimasa, 3,826,569.
Kindl, Helmut; and Westermeier, Heinz, to Siemens Aktiengesellschaft. Gas laser. 3,826,998, Cl. 331-94.50c.
King, Gordon J.; and Gugliotta, George, to Laser Sciences, Inc. Scanning inspection system and method. 3,826,578, Cl. 356-237.000.
King, James M. Floral accessory. 3,826,041, Cl. 47-41.120.
King Laboratories, Inc.: *See—*
Scott, Frederick P., 3,826,645.
King, Robert J.: *See—*
Dukelow, Donald A.; Hunter, Phillip B.; and King, Robert J., 3,826,647.
Kingsley, Jack D.; and Prener, Jerome S., to General Electric Company. Method for making electron energy sensitive phosphors for multi-color cathode ray tubes. 3,826,679, Cl. 117-100.00b.
Kinoshita, Kazuhisa; and Yamaguchi, Tetsuo. Process of manufacturing heat resisting steel sheet for deep drawing. 3,826,692, Cl. 148-12.000.
Kinsley, Homan B., Jr.: *See—*
Wilder, Harry D.; and Kinsley, Homan B., Jr., 3,826,067.
Kircher, Hartmann J., III: *See—*
Lovingham, Joseph J.; and Kircher, Hartmann J., III, 3,826,278.
Kirk, Bradley S.; and Chappel, Raymond M., to Airco, Inc. Gas absorption system and method. 3,826,742, Cl. 210-63.000.
Kishino, Shigeo; Yamada, Yasuo; Kurahashi, Yoshio; and Kume, Toyohiko, to Bayer Aktiengesellschaft. Fungicidal compolitions and methods of combating fungi using optionally halogenated cyanophenyl O, S-dialkyl phosphorothiolates. 3,826,831, Cl. 424-210.000.
Kisko, Harry; Hicks, Alan A.; and Morrison, Howard J., to Glass, Marvin, & Associates. Figured toy vehicle. 3,826,039, Cl. 46-98.000.
Kiss, Kornell D.; and Vandegaer, Jan E., to Dart Industries, Inc. Color improvement instabilized polyolefin resins. 3,826,780, Cl. 260-45.85b.
Kittrell, James R., to Chevron Research Company. Hydrocarbon conversion catalyst and process using said catalyst. 3,826,736, Cl. 208-59.000.
Kiyohara, Takehiko; and Mochizuke, Noritaka, to Canon Kabushiki Kaisha. Focus detector device. 3,827,064, Cl. 354-25.000.
Kleen Test Products, Inc.: *See—*
Larsh, Ray E.; and Urbansky, Donald I., 3,826,253.
Klein, Gerald B. Fisherman's tool. 3,825,961, Cl. 7-1.00h.
Klesper, Hugo: *See—*
Busse, Oswald; and Klesper, Hugo, 3,826,374.
Klicki, Chester E.: *See—*
Inman, Harold W.; Surletta, Zygmunt M.; and Klicki, Chester E., 3,825,960.
Klimek, Boleslaw, to Berg Manufacturing Company, The. Inversion valve. 3,826,283, Cl. 137-627.500.
Kloc, Henry F.: *See—*
Hougen, Gary A.; and Kloc, Henry F., 3,826,400.
Hougen, Gary A.; and Kloc, Henry F., 3,826,402.
Knapp, Alfons. Thermostatic mixer for hydraulic systems. 3,827,016, Cl. 236-12.00r.
Knapp, Charles F.; and Eades, George S., to University of Kentucky Research Foundation, The, mesne. Dynamic childbirth simulator for teaching maternity patient care. 3,826,019, Cl. 35-17.000.
Kneusel, Raymond H. P., to Crown Cork & Seal Company, Inc. Pressure release valves for aerosol cans. 3,826,412, Cl. 222-397.000.
Kobayashi, Tadahiro: *See—*
Masuda, Yoshinori; Sato, Hideo; Kobayashi, Tadahiro; and Terada, Yoshiaki, 3,826,712.
Kobe Steel Ltd.: *See—*
Ohta, Sadao; and Watase, Yasuo, 3,826,689.
Kobelt, Jack R. Engine load control. 3,826,590, Cl. 416-27.000.
Koberlein, James H.: *See—*
Towson, Glendon D.; and Koberlein, James H., 3,827,027.
Kobilka, Gary W., to Minnesota Mining and Manufacturing Company, mesne. Two-stage contact duplication of magnetic signals utilizing a metal-backed intermediate. 3,827,077, Cl. 360-16.000.
Kobzina, John W.; Moore, Joseph F.; and Kohn, Gustave K., to Chevron Research Company. Herbicidal N'-aryl-N-chlorocycloalkylthio ureas. 3,826,644, Cl. 71-98.000.
Kocache, Riad M.A.; and Holman, Danny F., to Sybron Corporation. Gas testing apparatus of the magnetic susceptibility type utilizing a gloss coated filament support fused to the test body. 3,826,974, Cl. 324-36.000.
Koenuma, Masao: *See—*
Senshu, Haruzo; Koenuma, Masao; and Gibu, Yoshitaka, 3,826,007.
Kohls, Frederick J.; Boldt, Bruce W.; and Gouge, Wilfred A., Sr., to Ladisch Co. Die lubricating composition. 3,826,743, Cl. 252-14.000.
Kohn, Gustave K.: *See—*
Kobzina, John W.; Moore, Joseph F.; and Kohn, Gustave K., 3,826,644.
Koike, Kengo: *See—*
Yamamoto, Hiroshi; Koike, Kengo; Ohgushi, Koji; and Tokumitsu, Iwao, 3,826,841.
Koketsu, Shigeyoshi, to Yasui Sangyo Company Limited. Vehicle washer. 3,826,018, Cl. 34-229.000.
Kokonashvili, Georgy Nikolaevich: *See—*
Kvesitadze, Georgy Ivanovich; Kokonashvili, Georgy Nikolaevich; and Fenixova, Raisa Vasilievna, 3,826,716.
Kolbe, Joachim. Vehicle banking arm construction. 3,826,514, Cl. 280-96.200.
Kolibas, James Andrew, to Addressograph-Multigraph Corporation. Photoconductor-carrying drum assembly. 3,826,570, Cl. 355-3.00r.
Komarek, Ernst; and Spahrkas, Heinrich, to Bayer Aktiengesellschaft. Pulverrulent mixture for tanning raw animal hides and leather. 3,826,610, Cl. 8-94.260.
Konishi, Masataka: *See—*
Kawaguchi, Hiroshi; Fujisawa, Kei-Ichi; Tsukiura, Hiroshi; and Konishi, Masataka, 3,826,802.
Koppers Company, Inc.: *See—*
Howell, Hilda,; and Kutz, Walter M., 3,826,766.
Schnell, Gunter; and Hohage, Klaus Albert, 3,826,169.
Kornylak, Andrew T., to Kornylak Corporation. Conveyor apparatus. 3,826,347, Cl. 198-20.00r.
Kornylak Corporation: *See—*
Kornylak, Andrew T., 3,826,347.
Koss, George S.; and Scott, Jay R., to United States Steel Corporation. Apparatus for preventing strip accumulation. 3,826,415, Cl. 225-94.000.
Koster, Wolfgang; and Jentzsch, Harald, to Stork Amsterdam N.V. Apparatus for forming and moving vertical loops in a strip of material. 3,826,417, Cl. 226-107.000.
Kostur, Robert E. Heating system. 3,826,017, Cl. 34-225.000.
Koury, Barbara Jean: *See—*
Spinelli, John; and Koury, Barbara Jean, 3,826,848.
Kousaka, Susumu: *See—*
Tanaka, Shoichi; Kousaka, Susumu; and Kimura, Toshio, 3,826,298.
Kowalski, Walter C.; and Them, Edward G., to Therm-O-Disc Incorporated. Thermostat with mounting means. 3,827,013, Cl. 337-354.000.
Kraemer, Delmar R. Apparatus for preference testing. 3,826,871, Cl. 179-1.00b.
Kralovec, William M.: *See—*
Frank, Raymond W.; and Kralovec, William M., 3,826,589.
Kroger, Dietrich, to Netter, Jean, Firma. Vibratory chute. 3,826,356, Cl. 198-220.0ca.
Krouse, Leroy M.: *See—*
Hornschuch, Hanns; and Krouse, Leroy M., 3,826,594.
Krueger, W. A. Co.: *See—*
Staskus, Edward J., 3,826,362.
Kruger, James; and LePage, Gerard T., to Scovill Manufacturing Company. Key container assembly. 3,826,118, Cl. 70-546.00b.
Kubo, Junichi; and Tajima, Yoshio, to Nippon Oil Company, Ltd. Method of contacting fluids and solid particles. 3,826,739, Cl. 208-157.000.
Kuhlmann, Franz; Gundlach, Arnold; and Seiffert, Horst, to Kuhlmann, Franz, KG. Drawing table. 3,826,204, Cl. 108-2.000.
Kuhlmann, Franz, KG: *See—*
Kuhlmann, Franz; Gundlach, Arnold; and Seiffert, Horst, 3,826,204.

Kuhn, L. Dean, to Maytag Company, The. Combustion chamber for dryer. 3,826,607, Cl. 432-105.000.

Kulig, Constantine W.; and Campbell, Lyman L., to Emhart Corporation. Article handling apparatus. 3,826,381, Cl. 214-1.0bt.

Kulka Electric Corporation: *See—*
Sullivan, James F., 3,827,003.

Kume, Toyohiko: *See—*
Kishino, Shigeo; Yamada, Yasuo; Kurahashi, Yoshio; and Kume, Toyohiko, 3,826,831.

Kunogi, Mahito; and Tanikawa, Teruo, to Kabushiki Kaisha Mekik Seisakusho. Injection molding machine with a venting device. 3,826,477, Cl. 259-191.000.

Kunz, Robert Irwin; Oram, John Gibb; and Schempp, Eberhard G., to Pennsylvania Engineering Corporation. Method and apparatus for directional switching of pneumatic material transport piping. 3,826,539, Cl. 302-27.000.

Kurahashi, Yoshio: *See—*
Kishino, Shigeo; Yamada, Yasuo; Kurahashi, Yoshio; and Kume, Toyohiko, 3,826,831.

Kurasiewicz, Adam S.: *See—*
Udelhofen, John J.; Watson, Roger W.; and Kurasiewicz, Adam S., 3,826,798.

Kurihara, Tomomichi: *See—*
Noma, Tetsuo; Hayakawa, Koji; Nagao, Osamu; Okano, Ichizo; Teramoto, Ryuzo; Kurihara, Tomomichi; Nakano, Kenji; and Okamoto, Tomiyasu, 3,826,399.

Kurimoto Iron Works, Ltd.: *See—*
Ikegawa, Kiyohiro, 3,826,479.

Kuroda, Hiroshi: *See—*
Nakajima, Yasuo; Oguri, Takeji; and Kuroda, Hiroshi, 3,826,089.

Kuroha, Hiroaki: *See—*
Hayase, Shunichiro; Shima, Seiya; Ando, Takeki; Kuroha, Hiroaki; and Kurosawa, Toshiaki, 3,826,961.

Kurokawa, Masao: *See—*
Ohya, Shogo; Hara, Katsuyuki; Takagi, Momoyoshi; and Kurokawa, Masao, 3,826,704.

Kuroki Motoharu: *See—*
Takagi, Akira; and Kuroki Motoharu, 3,826,416.

Kurosawa, Toshiaki: *See—*
Hayase, Shunichiro; Shima, Seiya; Ando, Takeki; Kuroha, Hiroaki; and Kurosawa, Toshiaki, 3,826,961.

Kuroyama, Shigefumi; Kaneda, Masaki; and Tamura, Hiroshi, to Showa Kenko Kabushiki Kaisha. Device for continuous cooling of hot powder. 3,826,015, Cl. 34-57.00r.

Kurz, Bruno; Barron, Mark B.; and Butler, Walter J., to General Electric Company. Dielectric strip isolation for JFET or MESFET depletion-mode bucket-brigade circuit. 3,825,995, Cl. 29-571.000.

Kuss R. L., & Co., Inc.: *See—*
Bell, Rupert B., 3,826,372.

Kutz, Walter M.: *See—*
Howell, Hilda,; and Kutz, Walter M., 3,826,766.

Kuypers, Norbert T.: *See—*
Bevis, Paul A.; Hoyt, Hazen L., III; Miner, Thomas E.; Kuypers, Norbert T.; and Kuypers, Norbert T., 3,827,072.

Kvesitadze, Georgy Ivanovich; Kokonashvili, Georgy Nikolaevich; and Fenixova, Raisa Vasilievna. Method for preparing α-amylase. 3,826,716, Cl. 195-66.00r.

KVP Company, Inc.: *See—*
Palmaer, Karl V., 3,826,150.

LaBarge, Robert L.: *See—*
Merkin, Bill C.; Tobias, Michael J.; Ray, Richard C.; and LaBarge, Robert L., 3,826,048.

Labbe, Francis Auguste Maurice, to Moline Limited. Air separator for tobacco feed systems. 3,826,065, Cl. 55-309.000.

Lacrex Brevetti S.A.: *See—*
Pasbrig, Max, 3,826,235.

Ladisch Co.: *See—*
Kohls, Frederick J.; Boldt, Bruce W.; and Gouge, Wilfred A., Sr., 3,826,743.

Laico, Joseph P. Edge wrapping for casts and method for using same. 3,826,252, Cl. 128-91.00r.

Laing, John Archibald. Method of diagnosing pregnancy in milk-producing animals by progestagen assay. 3,826,616, Cl. 23-230.00b.

Lake, Russel J.: *See—*
Van Zon, Jacob; and Lake, Russel J., 3,826,352.

Laliberte, Norman U., to American Optical Corporation. Selective optical filter and method of manufacture. 3,826,751, Cl. 252-300.000.

Lally, Joseph E.: *See—*
Foster, Colin E.; and Lally, Joseph E., 3,826,883.

Lamb, Jimmy W.; and English, Richard A., to Carrier Corporation. Apparatus for charging absorption refrigeration systems. 3,826,104, Cl. 62-149.000.

Lamplugh, Roland J.; and Triolo, Rocco P., to Scott Paper Company. Super-stiff polyurethane foam. 3,826,763, Cl. 260-2.5am.

Landaud, Andre: *See—*
Nicolas, Yves; and Landaud, Andre, 3,826,133.

Landwehrkamp, Hans: *See—*
Hoeber, Gerhard; and Landwehrkamp, Hans, 3,826,073.

Lane, Norman: *See—*
Evans, Philip Henry; and Lane, Norman, 3,826,504.

Lanier Electronic Laboratory, Inc.: *See—*
Bolick, Fred C., Jr., 3,827,079.

Larsen, Gregory J., to Wayne Manufacturing Company. Cutter broom suspension. 3,825,968, Cl. 15-87.000.

Larsen, Jan. Method and means for reducing wave pressures on under-sea constructions. 3,826,098, Cl. 61-46.000.

Larsh, Ray E.; and Urbansky, Donald I., to Kleen Test Products, Inc. Surgical drape with closed fenestration. 3,826,253, Cl. 128-132.00d.

Larson, Andrew H.: *See—*
Orlankini, Bruno; Um, Taesung; and Larson, Andrew H., 3,826,819.

Laser Sciences, Inc.: *See—*
King, Gordon J.; and Gugliotta, George, 3,826,578.

Lauterwasser, Armin: *See—*
Thiel, Rudolf; and Lauterwasser, Armin, 3,826,175.

Lavery, Lewis F.: *See—*
O'Hanlon, Edward J.; and Lavery, Lewis F., 3,826,106.

Lawson, Alexander, to Ontario Research Foundation. Emission control system. 3,826,810, Cl. 423-212.000.

Le Gales, Maurice, to Thomson-CSF. Case for a plurality of semiconductor devices. 3,826,953, Cl. 317-100.000.

Le Hardy, Clement D., to Sonoco Products Company. Yarn tube. 3,826,445, Cl. 242-118.320.

Leach, Robert D., to General Electric Company. Nonreversible motor. 3,826,934, Cl. 310-41.000.

Lear Siegler, Inc.: *See—*
Pareja, Ramon, 3,826,474.

Lecourt, Jean Albert, to Saint-Gobain Industries. Manufacture of flat glass by flotation. 3,826,637, Cl. 65-182.00r.

Ledner, Albert C. Emergency descent apparatus. 3,826,341, Cl. 188-65.500.

Lee, Arthur L.; and Michaels, Milton M. . 3,826,249, Cl. 128-24.00r.

Lee, Conrad E., to Pako Corporation. Light seal for hand openings in photographic processing equipment. 3,826,300, Cl. 160-179.000.

Leedom, Marvin A.; and Miller, Michael Evans. Information playback system stylus. 3,826,877, Cl. 179-100.10b.

Leeds & Northrup Company: *See—*
Fishman, Walter, 3,826,305.

Leffel, Granville P.: *See—*
Horton, Ray E.; Harris, Ernest S.; and Leffel, Granville P., 3,826,585.

Legnick, Guenther Fritz, to Stauffer Chemical Company. Room temperature curable organopolysiloxanes. 3,826,782, Cl. 260-46.50e.

Leicher, Wolfgang; and More, Anton, to Wacker-Chemie GmbH. Foamed molten welding powders with low bulk density. 3,826,695, Cl. 148-26.000.

Leisring, Justin G.: *See—*
Amneus, John S.; and Leisring, Justin G., 3,826,363.

Leland Stanford Junior University, Board of: *See—*
Day, Edmund P.; Fairbank, William M.; and Opfer, James E., 3,826,972.

Leland Stanford Junior University, Board of Trustees of: *See—*
Quate, Calvin F.; and Otto, Oberdan W., 3,826,865.
Quate, Calvin F.; Otto, Oberdan W.; and Moll, Nicolas J., 3,826,866.

Lenander, Bo; and Ling, Bernt, to Allmannna Svenska Elektriska Aktiebolaget. Arragement in cranes to determine the deviation of the hoisting device of the crane from a defined vertical line. 3,826,380, Cl. 212-125.000.

Lenkoff, Leon G. Invisible ink markings in defined areas of a game device responsive to color changing chemical marker. 3,826,499, Cl. 273-130.00b.

Leonard, John E.: *See—*
Watanabe, Hideo; and Leonard, John E., 3,826,730.

Leonard, John M.; and Lewis, John S., Jr., to Texaco Inc. Method and apparatus for the optimum blending of lubricating base oils and an additive. 3,826,904, Cl. 235-151.100.

LePage, Gerard T.: *See—*
Kruger, James; and LePage, Gerard T., 3,826,118.

Lerche-Svendsen, Flemming. Apparatus for introducing a filling material into a container of flexible material. 3,826,292, Cl. 141-114.000.

Les Fabriques d'Assortiments Reunies: *See—*
Tuetey, Paul, 3,826,076.

Levaco, Robert M.; and Dolgoff, Jordan A., said Levaco assor, to Oppenheimer Casing Co. Casing-carrier assembly and method. 3,826,852, Cl. 426-132.000.

Levaco, Robert M., to Oppenheimer Casing Co. Casing-carrier assembly and method. 3,826,853, Cl. 426-132.000.

Levine, Jeffrey Steven: *See—*
Javan, Ali; and Levine, Jeffrey Steven, 3,826,997.

Levy, Sander A., to Reynolds Metals Company. Aluminum alloy system. 3,826,688, Cl. 148-2.000.

Lewandowski, Raymond F., to Oak Industries Inc. Keyboard switch. 3,826,884, Cl. 200-159.00r.

Lewis, George E.; Brown, Albert W.; and Osborne, Harris Dean, to Bear Brand Hosiery Co. Pneumatic package loader. 3,826,062, Cl. 53-255.000.

Lewis, John S., Jr.: *See—*
Leonard, John M.; and Lewis, John S., Jr., 3,826,904.

Lewis, William Trevor: *See—*
Addinall, Ramon Leonard; Lewis, William Trevor; and Mudroch, Otokar, 3,826,628.

Leybold-Heracus-Verwaltung GmbH: *See—*
Frank, Rudiger, 3,826,588.

Licentia Patent-Verwaltungs-G.m.b.H.: *See—*
Epple, Richard, 3,826,984.
Oberbeck, Gelmut, 3,825,998.
Pritschow, Gunter, 3,826,131.

Lieberman, Jerry. Calendar arrangement. 3,826,029, Cl. 40-107.000.
Liebowitz, Marvin; and McHugh, Neil M., to Colgate-Palmolive Company. Fabric conditioning. 3,826,682, Cl. 117-139.5cq.
Lind, Hanns: *See*—
Rody, Jean; and Lind, Hanns, 3,826,752.
Lindburg, Norman Lee: *See*—
Blust, Henry Leo; and Lindburg, Norman Lee, 3,826,634.
Lindo, Neil A.: *See*—
Zinnes, Harold; and Lindo, Neil A., 3,826,791.
Ling, Bernt: *See*—
Lenander, Bo; and Ling, Bernt, 3,826,380.
Lingo, Inc.: *See*—
Lingo, John E., Jr., 3,826,223.
Lingo, John E., Jr., to Lingo, Inc. Halyard silencing clasp. 3,826,223, Cl. 116-174.000.
Linko, Peter J.; and Treece, William D., to General Electric Company. Method for fabricating a hollow blade. 3,825,984, Cl. 29-156.80h.
Lipper, Ray W., to Center Line Tool Co., Inc. Automotive wheel. 3,826,538, Cl. 301-63.0dd.
Liptak, Neil R.; and Echerd, Beno E., to Caterpillar Tractor Co. Retractable ladder. 3,826,337, Cl. 182-91.000.
Litteral, Gerald M.: *See*—
Bachmann, Andrew G.; and Litteral, Gerald M., 3,826,756.
Little, William A., to United States of America, Navy. Electrical control device for a re-entry vehicle. 3,826,452, Cl. 244-1.0ss.
Lobb, Daniel Richard; and Spooner, Archer Michael, to Redifon Limited. Illuminating and imaging system for optical probe. 3,826,557, Cl. 350-17.000.
Lockheed Aircraft Corporation: *See*—
Currey, Norman S.; and Renshaw, John H., 3,826,450.
Loctite Corporation: *See*—
Bachmann, Andrew G.; and Litteral, Gerald M., 3,826,756.
Batson, Robert E.; and Bachmann, Andrew G., 3,826,673.
Lorenz, Jerome L., to Ranco Incorporated. Damper actuator controls for air conditioning systems. 3,826,963, Cl. 318-471.000.
Loshbough, Richard C., to Reliance Electric Company. Scale motion detection. 3,826,319, Cl. 177-25.000.
Lotte Co., Ltd.: *See*—
Ogawa, Koichi; and Terasawa, Masatoshi, 3,826,847.
Lovell, Walter: *See*—
Roberts, Joseph Normand; and Lovell, Walter, 3,826,040.
Lovie, Peter M., to Engineering Technology Analysts, Inc. Self-elevating offshore platform with folding legs. 3,826,099, Cl. 61-46.500.
Lovingham, Joseph J.; and Kircher, Hartmann J., III. Missile and powerplant. 3,826,278, Cl. 137-599.000.
Lowery, Virgil W.: *See*—
Wallin, Walter R.; Lowery, Virgil W.; and Smith, Richard R., 3,826,921.
Lowrey, Erlend Rupert, to Procter & Gamble Company, The. Recovery of a monoglyceride by azeotropic distillation with an alcohol. 3,826,720, Cl. 203-20.000.
Lucas, Joseph, (Industries) Limited: *See*—
Bottoms, Harry Simister, 3,826,595.
Thomas, Alan; and Heath, Ronald Alfred, 3,826,143.
Ludl, Helmut: *See*—
Hoerenz, Peter G.; and Ludl, Helmut, 3,827,070.
Luongo, Michael C.: *See*—
Conrad, Joseph D., Jr.; Gangloff, Wilmer C., Jr.; and Luongo, Michael C., 3,826,094.
Lynch Communication Systems, Inc.: *See*—
Vax, Naftali; and Shim, Wook Rang, 3,826,869.
Lyons, Charles S.: *See*—
Nash, Dudley O.; and Lyons, Charles S., 3,826,088.
M & T Chemicals Inc.: *See*—
Treadwell, Kenneth, 3,826,762.
Mac Leod, Kenneth J.: *See*—
Band, Ian T.; and Mac Leod, Kenneth J., 3,826,901.
MacFarland, Charles H., to Scott & Fetzer Company, The. Shag rug fluffer. 3,825,972, Cl. 15-373.000.
MacGregor, William W., to Honeywell Information Systems Inc. Transparent multiplexer communication transmission system. 3,826,872, Cl. 179-15.00a.
Madigan, Basil M., to Goodyear Tire & Rubber Company, The. Cam positioned drive connector for rotor. 3,826,109, Cl. 64-27.000.
Maestri, Giordano Bruno. Device for sequentially driving large headed gimp nails. 3,826,419, Cl. 227-136.000.
Maczawa, Shuji, to Kabushiki Kaisha Suwa Seikosha. Display device for numeric characters. 3,827,043, Cl. 340-336.000.
Magill, George Maurice Martin, to Rotax Limited. Constant speed output toric transmission with hydraulic controls consisting of a rotatable spider, an actuating valve and governor means. 3,826,148, Cl. 74-200.000.
Magnavox Company, The: *See*—
Keith, Emerald Eugene, 3,826,989.
Maier, Alfred E.; and Shimp, Alan B., to Westinghouse Electric Corporation. Circuit breaker with replaceable rating adjuster and interlock means. 3,826,951, Cl. 317.033.0sc.
Maier, Elmar, to Hilti Aktiengesellschaft. Device for fastening identification members. 3,825,989, Cl. 29-211.00d.
Mailloux, Louis D., to Xerox Corporation. Optical arrangement for high speed printout system. 3,827,062, Cl. 354-5.00r.
Mair, Anton Josef, to Ott, A. Device for feeding a lubricating oil or the like to the periphery of a rotating element. 3,826,338, Cl. 184-11.00a.
Maki, Eugene: *See*—
Boyd, James; Garfield, Lawrence A.; Hanninen, Clifford; and Maki, Eugene, 3,826,536.
Boyd, James; Garfield, Lawrence A.; Hanninen, Clifford; and Maki, Eugene, 3,826,537.
Malan, Johannes Daniel: *See*—
Venter, Peter Jacobus; and Malan, Johannes Daniel, 3,826,849.
Mallett, James A.; and Mitchell, Edward B., to Ark-Les Switch Corporation. Pushbutton slide switch. 3,827,008, Cl. 339-95.00d.
Mallory, P. R., & Co., Inc.: *See*—
Dey, Arabinda N., 3,826,687.
Mandzsu, Jozsef; Jagicza, Laszlo; Peter, Attila; Kellner, Laszlo; and Jodal, Sandor, to Tok-Gyem Finommechanikai es. Illuminated display device providing continuous light gradation. 3,827,042, Cl. 340-335.000.
Mannesmann-Meer Aktiengesellschaft: *See*—
Hiersig, Heinz M.; Hansgen, Klaus; and Fleischmann, Erwin, 3,826,218.
Marconi Company Limited, The: *See*—
Miller, William Francis, 3,826,995.
Quilliam, Robert Mark, 3,827,033.
Marder, Arnold R.: *See*—
Melloy, George F.; Bramfitt, Bruce L.; and Marder, Arnold R., 3,826,691.
Markus, Dusan K. Angle digital converter system. 3,827,045, Cl. 340-347.0ad.
Marotto, Alan P., to Automec, Inc. Numerical control system for press brakes and the like. 3,826,119, Cl. 72-36.000.
Marsh, Charles Richard, to Auto-Masters Limited. Apparatus having one or more rotatably driven components. 3,826,306, Cl. 165-47.000.
Marsik, Stanley J.: *See*—
Philipp, Warren H.; Marsik, Stanley J.; and May, Charles E., 3,826,726.
Marsteller, Kenneth E., to International Telephone and Telegraph Corporation. Ventilation damper for air conditioning apparatus. 3,826,105, Cl. 62-262.000.
Marsteller, Kenneth E., to International Telephone and Telegraph Corporation. Condensate entrainment device. 3,826,107, Cl. 62-279.000.
Martin, Alvin M.: *See*—
Hardick, Aldin; House, Delbert; and Martin, Alvin M., 3,825,988.
Martin, Byron W.; and Gibson, William, to Miner Enterprises, Inc. Hopper gate outlet assembly. 3,826,203, Cl. 105-282.00p.
Marulich, Anthony J., to General Foods Corporation. Sulsh beverages containing fine-grained ice crystals. 3,826,829, Cl. 426-190.000.
Maruyama, Fumishige; Yasui, Toshiyuki; and Asada, Kaoru, to Teijin Limited and Teijin Modern Yarn Co., Ltd. Process for producing a bulky yarn. 3,826,075, Cl. 57-157.0ts.
Maschinenfabrik Gustav Eirich: *See*—
Ahrenberg, Kurt, 3,826,476.
Massachusetts Institute of Technology: *See*—
Javan, Ali; and Levine, Jeffrey Steven, 3,826,997.
Woodroffe, Jaime A.; and Appleton, John P., 3,826,920.
Masuda, Yoshinori; Sato, Hideo; Kobayashi, Tadahiro; and Terada, Yoshiaki, to Asahi Kasie Kogyo Kabushiki Kaisha. Acrylic synthetic paper and method for producing the same acrylic fibers wet spun from a blend of hydrolyzed and unhydrolyzed acrylic polymershaving at least 60% acrylonitrile by weight and paper made from such fibers. 3,826,712, Cl. 162-157.00r.
Matsui, Takeshi: *See*—
Shimauchi, Shiro; Minemura, Norihiro; Matsui, Takeshi; Ito, Kenji; Shima, Takeo; Kawase, Shoji; and Oshima, Masataka, 3,826,609.
Matsumoto, Kazuya, to Canon Kabushiki Kaisha. Holographic camera for forming planar or volume holograms. 3,826,555, Cl. 350-3.500.
Matsushita Electric Industrial Co., Ltd.: *See*—
Oka, Shunzo; Minami, Shunji; and Takemura, Takehide, 3,826,970.
Matsushita Electric Industrial Company, Limited: *See*—
Yabu, Toshiomi; Sakumoto, Hideki; and Namoto, Yoshiteru, 3,826,447.
Matsushita, Shigeo; Ueki, Atsufumi; and Furukawa, Motoaki, to Nippon Selfoc Company Limited. Optical modulator. 3,827,000, Cl. 332-7.510.
Mauch, Hans A.; and Smith, Glendon, to United States of America, Veterans Administration mesne. Reading machine employing a two-dimensional multiple snapshot process. 3,827,025, Cl. 340-146.30f.
Mavrovic, Ivo. Recovery of residual ammonia from weak aqueous solutions thereof. 3,826,815, Cl. 423-356.000.
May, Charles E.: *See*—
Philipp, Warren H.; Marsik, Stanley J.; and May, Charles E., 3,826,726.
Mayrl, Jose A.: *See*—
Miller, Charles H.; and Mayrl, Jose A., 3,826,051.
Maytag Company, The: *See*—
Kuhn, L. Dean, 3,826,607.
Maytham, Walter J.: *See*—
Bilbrey, Robert A.; and Maytham, Walter J., 3,826,001.
Mc Laughlin, Michael H.; Walmet, Gunnar E.; and Corman, James C., to General Electric Company. Double-sided heat-pipe cooled power semiconductor device assembly using compression rods. 3,826,957, Cl. 317-234.00r.
Mc Vey, James R.; and Meyer, Thomas O., to United States of America, Interior. Surface deformation indicating apparatus. 3,826,128, Cl. 73-88.00e.

McClelland, Theodore M., Ill, to Westinghouse Electric Corporation. Indicator circuit for monitoring pulses initiated in a remote meter reading system. 3,826,982, Cl. 324-113.000.

McCloskey, Albert R., to North American Rockwell Corporation. Method for manufacturing spherical bearing assemblies. 3,825,983, Cl. 29-149.50b.

McClung, Robert A. Rail seat and support structure. 3,826,423, Cl. 238-264.000.

McClung, Robert A.; and Pliml, Frank V., Jr., said Pliml assor. to said Illinois Tool works, Inc. Rail seat and support structure. 3,826,424, Cl. 238-264.000.

McCormick, Walter R., to N L Industries, Inc. Method for scrubbing HCl from waste gases. 3,826,816, Cl. 423-497.000.

McDonald, Allan J., to Thiokol Chemical Corporation. Gas rocket system. 3,826,087, Cl. 60-200.000.

McDonnell Douglas Corporation: *See—*
Dervy, Aram J., 3,826,708.
Garfield, Gerald; and Rout, Cecil H., 3,826,888.

McFarland, Keith H. Electrical ataxiameter. 3,826,145, Cl. 73-432.00r.

McFarland, Philip J.; and Rambauske, Werner R., to Raytheon Company. Catoptric lens arrangement. 3,826,911, Cl. 240-41.35r.

McGinnis, Michael K.; and Wallace, Paul F., to Aluminum Company of America. Method of providing article from clad aluminum base alloy. 3,825,993, Cl. 29-472.900.

McGregor, John L. Color TV apparatus and method. 3,827,076, Cl. 358-58.000.

McGregor, William H.: *See—*
Sarantakis, Dimitrois; McGregor, William H.; and McKinley, Wayne A., 3,826,796.

McHugh, Neil M.: *See—*
Liebowitz, Marvin; and McHugh, Neil M., 3,826,682.

McKean, Joseph T.; and Steinhauer, Norman M., to Allis-Chalmers Corporation. Rotor construction for squirrel cage motor. 3,826,940, Cl. 310-211.000.

McKee, Lewis W., to Barden Corporation, The. Readily assembled temperature compensated dual angular contact bearing assembly. 3,826,545, Cl. 308-189.00r.

McKenna, Norman James: *See—*
Grimes, John Herbert; Scott, Kenneth Thomas Bartlett; and McKenna, Norman James, 3,826,755.

McKinley, Wayne A.: *See—*
Sarantakis, Dimitrois; McGregor, William H.; and McKinley, Wayne A., 3,826,796.

McKinney Manufacturing Company: *See—*
Gwozdz, Joseph W., 3,825,973.

McNees, Sterling G.: *See—*
Polese, James P.; and McNees, Sterling G., 3,826,948.

Mechler, John L. Paper compactor and bundler. 3,826,186, Cl. 100-125.000.

Medidyne Corporation: *See—*
Smith, Gordon E., 3,826,256.

Medtronic, Inc.: *See—*
Giori, Francis A.; and Topolski, Alvin S., 3,826,265.

Mee, John D.: *See—*
Jenkins, Philip W.; Heseltine, Donald W.; and Mee, John D., 3,826,656.

Mehn, Robert P.: *See—*
Classe, Anthony V.; and Mehn, Robert P., 3,826,229.

Mehne, Albert R. Propelling apparatus for skiers. 3,826,323, Cl. 180-5.00r.

Meier, Johann. Length gauging apparatus. 3,826,009, Cl. 33-169.00r.

Meiser, Werner: *See—*
Buchel, Karl Heinz; Meiser, Werner; Plempel, Manfred; and Metzger, Carl, 3,826,836.

Meitinger, Heinz. Device for insulatedly assembling a component for electrically driven timepieces. 3,825,985, Cl. 29-178.000.

Mellor, Eli K., to Verco Industries. Needle or catheter retaining. 3,826,254, Cl. 128-133.000.

Melloy, George F.; Bramfitt, Bruce L.; and Marder, Arnold R., to Bethlehem Steel Corporation. Rolled ferrite-pearlite alloy plate and method of processing same. 3,826,691, Cl. 148-12.000.

Melvin, Raymand C., to Harnischfeger Corporation. Spot welding apparatus for welding end conductors in cylindrical electrical machine elements. 3,826,894, Cl. 219-124.000.

Melzer, Paul Albin: *See—*
Antipov, Igor; and Melzer, Paul Albin, 3,826,698.

Mengeringhausen, Max, to Mero AG. Process and apparatus for the production of connectors for space frameworks or the like. 3,826,584, Cl. 408-35.000.

Mennesson, Andre Louis, to Societe Industrielle de Brevets et d'Etudes S.I.B.E. Injection devices for internal combustion engines. 3,826,233, Cl. 123-119.00r.

Mercade, Venancio V., to Engelhard Minerals & Chemicals Corporation. Beneficiating clay by selective flocculation and magnetic separation of impurities. 3,826,365, Cl. 209-5.000.

Merkin, Bill C.; Tobias, Michael J.; Ray, Richard C.; and LaBarge, Robert L., to Aluminum Company of America. Combined gutter, fascia, soffit arrangement. 3,826,048, Cl. 52-11.000.

Mero AG: *See—*
Mengeringhausen, Max, 3,826,584.

Messera, Dominic; and Messera, Louis. Ignition starter lock key removal system. 3,826,116, Cl. 70-388.000.

Messera, Louis: *See—*
Messera, Dominic; and Messera, Louis, 3,826,116.

Metallgeseschaft Aktiengesellschaft: *See—*
Gebhard, Manfred; Nitzsche, Curt; and Pfeffer, Simon, 3,826,772.

Metzger, Carl: *See—*
Buchel, Karl Heinz; Meiser, Werner; Plempel, Manfred; and Metzger, Carl, 3,826,836.

Meyer, Jean-Claude: *See—*
De Lavalette, Pierre de Lacroix; Hein, Daniel; Boudet, Georges; Meyer, Jean-Claude; Neron, Alain; Biaunier, Alain; Blaiberg, Alain; Nouveau, Jean Louis; Charpentier, Jacques Georges; and Jacquot, Alain, 3,825,982.

Meyer, Thomas O.: *See—*
Mc Vey, James R.; and Meyer, Thomas O., 3,826,128.

Meyer, Warren H. Electric mortar spreader. 3,826,410, Cl. 222-178.000.

Michaels, Milton M.: *See—*
Lee, Arthur L.; and Michaels, Milton M., 3,826,249.

Michels, Alfred; and Fleischer, Kurt, to Chemische Werke Huls Aktiengesellschaft. Poly-1-butene coated release paper. 3,826,677, Cl. 117-76.00p.

Micromedic Systems, Inc.: *See—*
Johnson, Edgar G., Jr.; and Cornelison, James J., 3,826,621.

Midolo, Lawrence L.; and Armstrong, Lee R. Brake and stabilizer for air cushion vehicles. 3,826,330, Cl. 180-116.000.

Migowski, Gunther. Flying toy and catapult for vertical launching thereof. 3,826,037, Cl. 46-84.000.

Miles, Gilbert De Wayne, to Colgate-Palmolive Company. Laminated web package. 3,826,441, Cl. 242-55.530.

Miles Laboratories, Inc.: *See—*
Butler, Arthur Devon; Debroka, Robert Lee; Moyer, Horace Bradley; and Yinger, Robald Lee, 3,826,358.

Milfait, Zdenek, to Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi. Arrangement for monitoring a programmable controller for a knitting machine. 3,826,907, Cl. 235-153.0ac.

Miliaras, Emmanuel Stephen. Reheat vapor generator. 3,826,093, Cl. 60-665.000.

Milisavljevic, Milorad. Heat engine. 3,826,085, Cl. 60-39.620.

Milisavljevic, Milorad. Heat engine. 3,826,086, Cl. 60-39.620.

Miller, Charles H.; and Mayrl, Jose A. Wall structure. 3,826,051, Cl. 52-227.000.

Miller, Donald, to United States of America, Army, The. Controllable heat sealing process for optimum seal strength. 3,826,701, Cl. 156-64.000.

Miller, Ellsworth S.: *See—*
Du Rocher, Gideon A.; and Miller, Ellsworth S., 3,826,000.

Miller, Harry R., to SCM Corporation. Print head mounting assembly. 3,826,345, Cl. 197-52.000.

MIller, Herman, Inc.: *See—*
Propst, Robert L.; and Kelley, James O., 3,826,550.

Miller, John J.: *See—*
Bowes, Robert J.; and Miller, John J., 3,826,947.

Miller, Leonidas C. Rotary flow meter for wells. 3,826,134, Cl. 73-155.000.

Miller, Michael Evans: *See—*
Leedom, Marvin A.; and Miller, Michael Evans, 3,826,877.

Miller, Robert G.: *See—*
Anderson, Arlynn W.; Coleman, Donald F.; Fuzzell, Joe E.; Greiner, Jonny R.; and Miller, Robert G., 3,827,024.

Miller, William Francis, to Marconi Company Limited, The. Frequency generators. 3,826,995, Cl. 221-38.000.

Minami, Shunji: *See—*
Oka, Shunzo; Minami, Shunji; and Takemura, Takehide, 3,826,970.

Minemura, Norihiro: *See—*
Shimauchi, Shiro; Minemura, Norihiro; Matsui, Takeshi; Ito, Kenji; Shima, Takeo; Kawase, Shoji; and Oshima, Masataka, 3,826,609.

Miner Enterprises, Inc.: *See—*
Martin, Byron W.; and Gibson, William, 3,826,203.

Miner Enterprisis, Inc.: *See—*
Motus, Ulo; and Hammarlund, Richard C., 3,826,154.

Miner, Thomas E.: *See—*
Bevis, Paul A.; Hoyt, Hazen L., Ill; Miner, Thomas E.; Kuypers, Norbert T.; and Kuypers, Norbert T., 3,827,072.

Minicozzi, Alexander S.; and Minicozzi, Alexander S., Jr. Plaster additive and plaster compositions. 3,826,663, Cl. 106-90.000.

Minicozzi, Alexander S., Jr.: *See—*
Minicozzi, Alexander S.; and Minicozzi, Alexander S., Jr., 3,826,663.

Minieri, Pasquale P., to Tenneco Chemicals, Inc. Surface-coating compositions that contain N^1-(substituted ethyl) indazoles. 3,826,657, Cl. 106-17.000.

Minnesota Mining and Manufacturing Company: *See—*
Ball, James H., 3,827,015.
Carlson, Robert C., 3,826,769.

Minnesota Mining and Manufacturing Company, mesne: *See—*
Kobilka, Gary W., 3,827,077.

Mitchell, Edward B.: *See—*
Mallett, James A.; and Mitchell, Edward B., 3,827,008.

Miyahara, Kingo, to Kabushiki Kaisha Dowa. Direct contact water heater. 3,826,240, Cl. 126-355.000.

Mize, Jack P., to Texas Instruments Incorporated. Gated bilateral switching semiconductor device. 3,827,073, Cl. 357-39.000.

Mobil Oil Corporation: *See—*
Petrucco, Richard J.; and Schick, John W., 3,826,671.
Schick, John W.; and Cushman, Donald R., 3,826,725.

Shick, John W.; Davis, Robert H.; and Simpson, Charles A., 3,826,746.
Simpson, Charles A.; Davis, Robert H.; and Sedlak, Michael, 3,826,620.
Steffens, Lester R., 3,826,291.
Strong, Jerry G., 3,826,840.
Theissen, Robert J., 3,826,640.

Mochizuke, Noritaka: *See—*
Kiyohara, Takehiko; and Mochizuke, Noritaka, 3,827,064.

Moellering, Edgar E., to National Cash Register Company, The. Cordless scanning probe. 3,826,900, Cl. 235-61.11e.

Moen, Alfred M. Shower-tub diverter valve. 3,826,274, Cl. 137-119.000.

Moen, Alfred M. Adjustable shower head. 3,826,429, Cl. 239-460.000.

Molina, Orlando G., to Rockwell International Corporation. Composition for ultrasonic inspection of objects and method for employing same. 3,826,127, Cl. 73-67.50r.

Molina, Orlando G., to Rockwell International Corporation. Reverse magnetic inspection method. 3,826,917, Cl. 250-302.000.

Moline Limited: *See—*
Labbe, Francis Auguste Maurice, 3,826,065.

Moll, Nicolas J.: *See—*
Quate, Calvin F.; Otto, Oberdan W.; and Moll, Nicolas J., 3,826,866.

Monek, Francis H. Golf board game apparatus. 3,826,498, Cl. 273-134.0ad.

Moniot, Vincent E. Article dispenser. 3,826,406, Cl. 221-58.000.

Monsanto Company: *See—*
Mye, James O.; Salabarria, Miguel A.; and Westmoreland, David H., 3,826,064.
Porter, Clark A., 3,826,641.

Montgomery, Gary Van, to Sunbeam Plastics Corporation. Leak-proof closure for a liquid container. 3,826,395, Cl. 215-9.000.

Moon, Malcolm W., to Upjohn Company, The. Certain dithioketals of glyoxyloyl halide 1-pheny-hydrazones as anti-arthropodal agents. 3,826,844, Cl. 424-327.000.

Moon, Paul G. Golf ball retriever. 3,826,439, Cl. 242-54.00r.

Moore, Daniel M., to United States of America, Navy. Retaining and release assembly. 3,825,980, Cl. 24-230.0an.

Moore, Gary R.: *See—*
Warren Fred E., Jr.; Fling, Kenneth F.; and Moore, Gary R., 3,826,437.

Moore, Joseph F.: *See—*
Kobzina, John W.; Moore, Joseph F.; and Kohn, Gustave K., 3,826,644.

Moore, Lee C., Corporation: *See—*
Woolslayer, Homer J.; and Jenkins, Cecil, 3,826,472.

Moore, Lou. Writing instrument. 3,825,976, Cl. 24-11.00f.

More, Anton: *See—*
Leicher, Wolfgang; and More, Anton, 3,826,695.

Morel, Paul Henri. Contraception and device for its application. 3,826,828, Cl. 424-184.000.

Morgan, Frederic L., to Buckman Laboratories, Inc. Petroleum fuel oil and black liquor combustion. 3,826,632, Cl. 44-66.000.

Mori, Toyoshi; and Iwase, Yoshitaka, to Kabushiki Kaisha Tokai Rika Denki. Minature electric synchronous motor. 3,826,939, Cl. 310-154.000.

Morris, Myrtle Ellen. Self-lining handbag or the like. 3,826,296, Cl. 150-3.000.

Morrison, Howard J.: *See—*
Kisko, Harry; Hicks, Alan A.; and Morrison, Howard J., 3,826,039.

Morse, Hugh B.; and Foster, Thomas W., to Fibreboard Corporation. Severable carton with sterile edge. 3,826,421, Cl. 229-51.0as.

Morse, Wade H.: *See—*
Anderson, Hugh G.; Rajan, Jai R. N.; and Morse, Wade H., 3,826,544.

Morton, John; Stevens, Keith Drummond; and Thexton, Graham Spencer, to Cableform Limited. Control of electric motors for battery-operated vehicles. 3,826,962, Cl. 318-376.000.

Mossman, Vera L. Therapeutic exercise apparatus. 3,826,490, Cl. 272-58.000.

Motorola, Inc.: *See—*
Wiley, Daryl D., 3,826,985.

Motus, Ulo; and Hammarlund, Richard C., to Miner Enterprisis, Inc. Means for controlling chain take-up in a hand brake mechanism. 3,826,154, Cl. 74-505.000.

Moulin, Louis; Confino, Maurice; and Godard, Gerard, to PEPRO, Societe pour le Developpement et la. Liquid insecticidal compositions for impregnation of solid supports for prolonged diffusion. 3,826,822, Cl. 424-27.000.

Mowrey, William L.: *See—*
Dubin, Robert R.; Mowrey, William L.; and Gilhooley, William A., 3,826,685.

Moyer, Horace Bradley: *See—*
Butler, Arthur Devon; Debroka, Robert Lee; Moyer, Horace Bradley; and Yinger, Robald Lee, 3,826,358.

Mudroch, Otokar: *See—*
Addinall, Ramon Leonard; Lewis, William Trevor; and Mudroch, Otokar, 3,826,628.

Mukunashi, Hiroaki: *See—*
Ichiba, Terumichi; Shimba, Hiroshi; and Mukunashi, Hiroaki, 3,826,862.

Mulaskey, Bernard F.: *See—*
Csicsery, Sigmund M.; and Mulaskey, Bernard F., 3,826,237.

Muller, Hans, to Grapha Maschinenfabrik Muller, Hans AG. Arrangement for affixing objects to travelling sheets. 3,826,706, Cl. 156-566.000.

Muller, Jochen, to Sulzer Brothers Ltd. Lightweight lever for high mechanical stressing. 3,826,155, Cl. 74-519.000.

Muller, Richard, to Gebr. Hofmann KG. Method and apparatus for imbalance determination. 3,826,146, Cl. 73-462.000.

Muller, Thomas P., to Caterpillar Tractor Company. Track tensioning and recoil apparatus. 3,826,543, Cl. 305-10.000.

Multi-State Devices Ltd.: *See—*
Plough, Charles T.; Tvedt, Jan Otto; Arts, Marcus; Eastwood, H. Keith; and Woo, Frank, 3,826,924.

Muramoto, Shoico: *See—*
Nakamura, Toshifumi; Ohsoshi, Akio; and Muramoto, Shoico, 3,826,949.

Murata, Kazuo; Ikeda, Hirotaka; Ashida, Katsuzi; and Sato, Uichi, to Yuasa Battery Company Limited and Yuasa Kiko Company Limited. Filtration process and filtration equipment. 3,826,369, Cl. 210-82.000.

Musso, Piero, to Olivetti, Ing., C., & C., S.p.A. Card guide for front-feed device in accounting machine or the like. 3,826,346, Cl. 197-127.00r.

Mye, James O.; Salabarria, Miguel A.; and Westmoreland, David H., to Monsanto Company. Vapor-liquid separator. 3,826,064, Cl. 55-204.000.

N L Industries, Inc.: *See—*
McCormick, Walter R., 3,826,816.

Nadachowski, Franciszek: *See—*
Grylicki, Miroslaw; Nadachowski, Franciszek; and Pawlowski, Stanislaw, 3,826,664.

Naegeli, Werner, to Pavena AG. Apparatus for impregnating textile fibers. 3,825,974, Cl. 19-66.00r.

Nagao, Osamu: *See—*
Noma, Tetsuo; Hayakawa, Koji; Nagao, Osamu; Okano, Ichizo; Teramoto, Ryuzo; Kurihara, Tomomichi; Nakano, Kenji; and Okamoto, Tomiyasu, 3,826,399.

Nagasaka, Nagahiko; and Shinohara, Katsuji, to Kabushiki Kaisha Yaskawa Kenki Seisakusho. Device for driving a stepping motor. 3,826,966, Cl. 318-696.000.

Nagashima, Shinichiro; Tsuchiya, Kaichi; Sakamoto, Yoshihiro; Yamakami, Hiroshi; and Tomari, Seiji, to Canon Kabushiki Kaisha. Toner for electrophotography. 3,826,747, Cl. 252-62.100.

Nakagawa, George; and Youmans, Bill. Temperature recorder. 3,826,140, Cl. 73-343.500.

Nakahara, Yasuji: *See—*
Suzuki, Isamu; Nakahara, Yasuji; Ichikawa, Kiyoshi; and Osonoi, Kaoru, 3,826,768.

Nakajima, Shigeo: *See—*
Fujimori, Masao; and Nakajima, Shigeo, 3,826,535.

Nakajima, Yasuo; Oguri, Takeji; and Kuroda, Hiroshi, to Nissan Motor Company, Limited. Air-pollution preventive arrangement. 3,826,089, Cl. 60-290.000.

Nakamura, Toshifumi; Ohsoshi, Akio; and Muramoto, Shoico, to Sony Corporation. Display device and method of making the same. 3,826,949, Cl. 315-169.00r.

Nakamura, Toshihiko, to Nihon Filter Co., Ltd. Method of treating waste solution containing chromate ion or cyanide ion. 3,826,741, Cl. 210-50.000.

Nakano, Kenji: *See—*
Noma, Tetsuo; Hayakawa, Koji; Nagao, Osamu; Okano, Ichizo; Teramoto, Ryuzo; Kurihara, Tomon.ichi; Nakano, Kenji; and Okamoto, Tomiyasu, 3,826,399.

Nalco Chemical Company: *See—*
Anderson, Donald R.; and Frisque, Alvin J., 3,826,771.

Namoto, Yoshiteru: *See—*
Yabu, Toshiomi; Sakumoto, Hideki; and Namoto, Yoshiteru, 3,826,447.

Napko Corporation: *See—*
Dowd, James Patrick; and Hunter, James C., 3,826,825.

Nash, Dudley O.; and Lyons, Charles S., to General Electric Company. Gas turbine engine augmenter cooling liner stabilizers and supports. 3,826,088, Cl. 60-261.000.

Natelson, Samuel, to Rohe Scientific Corporation. Containers for use in an automated centrifuge. 3,826,622, Cl. 23-259.000.

National Blank Book Company, Inc.: *See—*
Podosek, Edward, 3,826,582.

National Can Corporation: *See—*
Zundel, Arthur P., 3,826,401.

National Cash Register Company, The: *See—*
Ivashin, Victor S., 3,826,909.
Moellering, Edgar E., 3,826,900.

National Factors, Inc.: *See—*
Cetrulo, Frank A., 3,826,436.

National Research Development Corporation: *See—*
Broadway, Alexander Richard William; Fong, William; and Rawcliffe, Gordon Hindle, 3,826,960.
Busby, Terence Stanley; and Cox, Geoffrey Charles, 3,826,659.
Paine, Anthony Alan, 3,826,478.

National Steel Corporation: *See—*
Smith, John R.; and Bray, James A., 3,826,675.

National Union Electric Corporation: *See—*
Penn, William H.; and Eicher, Gerald J., 3,826,879.

Naumovski, Vera. Sport shirt. 3,825,954, Cl. 2-115.000.

Navara, Joseph. Window air filter with locking assembly. 3,826,182, Cl. 98-98.000.

Neher, James A. Ground automatic disconnect system. 3,826,954, Cl. 317-135.000.

Nelson, Bud D.; and Brennan, William M., to United States of America, Navy. Inflation and evacuation system for an air cushion landing system. 3,826,449, Cl. 244-100.00r.

Neron, Alain: *See—*
De Lavalette, Pierre de Lacroix; Hein, Daniel; Boudet, Georges; Meyer, Jean-Claude; Neron, Alain; Biaunier, Alain; Blaiberg, Alain; Nouveau, Jean Louis; Charpentier, Jacques Georges; and Jacquot, Alain, 3,825,982.

Netter, Jean, Firma: *See—*
Kroger, Dietrich, 3,826,356.

Neuco Apparatebau AG: *See—*
Schnyder, Conrad W.; and Cambiaghi, Danilo, 3,826,548.

Neugebauer, Gunther, to American Home Products Corporation. Insecticidal device. 3,826,036, Cl. 43-131.000.

Neugebauer, Walter: *See—*
Illigen, Alfred; and Neugebauer, Walter, 3,826,814.

Nevers, Ashley Dwight. Odorant composition for liquefied petroleum gases. 3,826,631, Cl. 44-52.000.

Neville, Humphrey: *See—*
Tuthill, George Robert; Temperley, Julian Harold Vazeille; and Neville, Humphrey, 3,826,069.

New Concepts Co., Inc.: *See—*
Dourian, Vincent J.; and Bassett, William M., 3,826,046.

New England Nuclear Corporation: *See—*
Novitch, Howard, 3,826,059.

New York Wire Mills Corporation: *See—*
Tolliver, Wilbur E., 3,826,287.

Nicholas, Kenneth Ernest Lewis, to British Cast Iron Research Associates. Foundry moulding materials. 3,826,658, Cl. 106-38.300.

Nichols, Ivan L.; and Dannenberg, Raymond O., to United States of America, Interior. Process for recovering tungsten form alkaline brine. 3,826,808, Cl. 423-54.000.

Nicolas, Yves; and Landaud, Andre, to Schlumberger Technology Corporation. Apparatus for sampling fluids flowing in a production well. 3,826,133, Cl. 53-152.000.

Niebylski, Leonard M.: *See—*
Jarema, Chester P.; and Niebylski, Leonard M., 3,826,303.

Nihon Filter Co., Ltd.: *See—*
Nakamura, Toshihiko, 3,826,741.

Nippon Electric Company, Limited: *See—*
Kawamura, Takuro; and Kawahara, Takashi, 3,826,943.

Nippon Gakki Seizo Kabushiki Kaisha: *See—*
Suzuki, Akihisa, 3,826,859.

Nippon Kayaku Kabushiki Kaisha: *See—*
Yamamoto, Hiroshi; Koike, Kengo; Ohgushi, Koji; and Tokumitsu, Iwao, 3,826,841.

Nippon Oil Company: *See—*
Shinomura, Toshihiko, 3,826,735.

Nippon Oil Company, Ltd.: *See—*
Kubo, Junichi; and Tajima, Yoshio, 3,826,739.

Nippon Selfoc Company Limited: *See—*
Matsushita, Shigeo; Ueki, Atsufumi; and Furukawa, Motoaki, 3,827,000.

Nishina, Shingo. Snap slide calipers. 3,826,008, Cl. 33-147.00f.

Nissan Motor Company, Limited: *See—*
Nakajima, Yasuo; Oguri, Takeji; and Kuroda, Hiroshi, 3,826,089.

Nissley, William G., Jr.: *See—*
Crimmins, Arthur G.; and Nissley, William G., Jr., 3,826,329.

Nitzsche, Curt: *See—*
Gebhard, Manfred; Nitzsche, Curt; and Pfeffer, Simon, 3,826,772.

Niwa, Kazuo: *See—*
Sawazaki, Hajime; Sakai, Kiyohide; Tsutsumi, Hiroshi; Sumitomo, Yasusuke; Niwa, Kazuo; and Inaba, Eisaku, 3,826,699.

Nobusawa, Tsukumo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Automatic camera shutter controls utilizing photoelectrically converted pulses. 3,827,060, Cl. 354-51.000.

Noe, William B., to Thermo Electron Corporation. External combustion engine and control mechanism therefor. 3,826,282, Cl. 137-625.690.

Noly, Jean, to Potain. Unit transmission gear including a decelerating device and an electromagnetic brake. 3,826,342, Cl. 188-171.000.

Noma, Tetsuo; Hayakawa, Koji; Nagao, Osamu; Okano, Ichizo; Teramoto, Ryuzo; Kurihara, Tomomichi; Nakano, Kenji; and Okamoto, Tomiyasu, to Hitachi Shipbuilding and Engineering Company, Ltd. Low temperature liquified gas storage tank. 3,826,399, Cl. 220-15.00.

Nordling, Karl I.: *See—*
Weathers, Luther V.; Nordling, Karl I.; and Ruffner, Ronald C., 3,826,908.

Nordson Corporation: *See—*
Baker, Robert G.; and Reighard, Alan B., 3,826,224.

North American Rockwell Corporation: *See—*
McCloskey, Albert R., 3,825,983.

Northrop Corporation: *See—*
Horton, Ray E.; Harris, Ernest S.; and Leffel, Granville P., 3,826,585.

Nossiter, Clarence Frank, to Enfield Industrial Engines Limited. Marine drive units. 3,826,219, Cl. 115-35.000.

Nouveau, Jean Louis: *See—*
De Lavalette, Pierre de Lacroix; Hein, Daniel; Boudet, Georges; Meyer, Jean-Claude; Neron, Alain; Biaunier, Alain; Blaiberg, Alain; Nouveau, Jean Louis; Charpentier, Jacques Georges; and Jacquot, Alain, 3,825,982.

Novak, Warren D. Ski rack. 3,826,378, Cl. 211-60.0sk.

Noveroske, Robert L. Antifungal composition and method of alkylenebisdithiocarbamate complex compounds. 3,826,846, Cl. 424-289.000.

Novitch, Howard, to New England Nuclear Corporation. Method of packaging radioactive materials. 3,826,059, Cl. 53-27.000.

Nu Swift International Limited: *See—*
Cotton, Michael John, 3,826,125.

Nuclear Metals, Inc., mesne: *See—*
Kaufmann, Albert R., 3,826,598.

Nuclear Research Associates, Inc., mesne: *See—*
Erlich, Melvin P.; Stoller, Milton; Grand, Stanley; and De Cote, Robert, 3,826,899.

Nugent, John A. Telemetering system. 3,826,868, Cl. 178-67.000.

N.V. Hollandse Signaalapparaten: *See—*
Van Staaden, Cornelis Augustinus; Bodmer, Maximiliaan Hubert; Van Hijfte, Herman Michel; and Gellekink, Bernard, 3,827,049.

Nykopp, Erik A., to Oy Tampella AB. Paper machine press section and method for using same. 3,826,713, Cl. 162-205.000.

Nystuen, Marcus I.: *See—*
Boraas, Stan L. C.; and Nystuen, Marcus I., 3,826,113.

O-Max Industries, Inc.: *See—*
Otto, Lloyd W., 3,826,159.

Oak Industries Inc.: *See—*
Johnson, Arthur R., 3,826,863.
Lewandowski, Raymond F., 3,826,884.

Oakdale Knitting Company: *See—*
Holder, Otis W., 3,826,110.

Obata, Kiyoshi: *See—*
Iwasaki, Shingi; and Obata, Kiyoshi, 3,826,952.

Oberbeck, Gelmut, to LICENTIA Patent-Verwaltungs-G.m.b.H. Method for producing dielectrically coated waveguides for the $_{01}$ wave. 3,825,998, Cl. 29-600.000.

O'Donnell, Cedric F.; and Pulliam, George R., to Rockwell International Corporation. Magnetic bubble domain system. 3,827,036, Cl. 340-174.0tf.

O'Donnell, William J. Bread Wrapper holder. 3,826,455, Cl. 248-97.000.

Oeser, Konrad, to Getefo Gesellschaft fur technischen Fortschritt m.b.H. Spring element for buffer springs. 3,826,481, Cl. 267-152.000.

Offermanns, Heribert: *See—*
Posselt, Klaus; and Offermanns, Heribert, 3,826,838.

Office National d'Etudes et de Recherches Aerospatides: *See—*
Bloch, Bertrand M., 3,826,783.

Ogawa, Koichi; and Terasawa, Masatoshi, to Lotte Co., Ltd. Process for preparation of flavor durable chewing gum. 3,826,847, Cl. 426-3.000.

Oguri, Takeji: *See—*
Nakajima, Yasuo; Oguri, Takeji; and Kuroda, Hiroshi, 3,826,089.

O'Hanlon, Edward J.; and Lavery, Lewis F. Refrigeration apparatus and process. 3,826,106, Cl. 62-275.000.

Ohgushi, Koji: *See—*
Yamamoto, Hiroshi; Koike, Kengo; Ohgushi, Koji; and Tokumitsu, Iwao, 3,826,841.

Ohsoshi, Akio: *See—*
Nakamura, Toshifumi; Ohsoshi, Akio; and Muramoto, Shoico, 3,826,949.

Ohta, Sadao; and Watase, Yasuo, to Kobe Steel Ltd. Austenite type heat-resisting steel having high strength at an elevated temperature and the process for producing same. 3,826,689, Cl. 148-3.000.

Ohya, Shogo; Hara, Katsuyuki; Takagi, Momoyoshi; and Kurokawa, Masao. Method of bonding polyolefine to a substance. 3,826,704, Cl. 156-306.000.

Oil Shale Corporation(Australia), The: *See—*
Hardwick, Bruce Alfred; and Patterson, John Howard, 3,826,809.

Oka, Shunzo; Minami, Shunji; and Takemura, Takehide, to Matsushita Electric Industrial Co., Ltd. Device for use in varying output voltage. 3,826,970, Cl. 323-19.000.

Okada, Ryuzo: *See—*
Suyama, Tsunesuke; Saeki, Masnori; and Okada, Ryuzo, 3,826,845.

Okamoto, Takeshi. Universal holding devices. 3,827,020, Cl. 335-285.000.

Okamoto, Tomiyasu: *See—*
Noma, Tetsuo; Hayakawa, Koji; Nagao, Osamu; Okano, Ichizo; Teramoto, Ryuzo; Kurihara, Tomomichi; Nakano, Kenji; and Okamoto, Tomiyasu, 3,826,399.

Okano, Ichizo: *See—*
Noma, Tetsuo; Hayakawa, Koji; Nagao, Osamu; Okano, Ichizo; Teramoto, Ryuzo; Kurihara, Tomomichi; Nakano, Kenji; and Okamoto, Tomiyasu, 3,826,399.

Okuda, Toshio, to Hashimotoso Kabushiki Kaisha. Cloth-protector for folding umbrella. 3,826,272, Cl. 135-20.0,r.

Olcott, Eugene L., to Atlantic Research Corporation. Pyrolytic graphite composites. 3,826,707, Cl. 161-57.000.

Oldenburg, Dorrance; and Sturges, James Robert, to Caterpillar Tractor Company. Wheel/track loader. 3,826,388, Cl. 214-140.000.

Olin Corporation: *See—*
Pryor, Michael J.; and Popplewell, James M., 3,826,627.
Pryor, Michael J.; and Popplewell, James M., 3,826,629.

Olinkraft, Inc.: *See—*
Bamburg, Robert A.; Duncan, Farris N.; and Floyd, Roger M., 3,826,420.

Oliver and Batlle, S.A.: *See—*

Pujol, Carlos Oliver, 3,826,435.
Olivette, Ing., C., & C., S.p.A.: *See*—
Giolitti, Nicolo; and Bovio, Michele, 3,826,915.
Olivetti, Ing., C., & C., S.p.A.: *See*—
Giolitti, Nicolo; Bovio, Michele; and Dalmasso, Claudio, 3,826,882.
Musso, Piero, 3,826,346.
Olson, John Dillwyn: *See*—
Tranter, Arthur; and Olson, John Dillwyn, 3,826,456.
Olsson, Per Ingermar: *See*—
Blomback, Gustav Erik Birger; Blomback, Margareta; Olsson, Per Ingermar; Svendsen, Lars-Gundro; Afekenstam, Bo Thuresson; and Claeson, Karl Goran, 3,826,793.
Ono, Yusuke: *See*—
Yanagisawa, Takeshi; Tanikoshi, Kinzi; and Ono, Yusuke, 3,827,066.
Ontario Research Foundation: *See*—
Lawson, Alexander, 3,826,810.
Opfer, James E.: *See*—
Day, Edmund P.; Fairbank, William M.; and Opfer, James E., 3,826,972.
Oppenheimer Casing Co.: *See*—
Levaco, Robert M.; and Dolgoff, Jordan A. (said Levaco assor. to), 3,826,852.
Levaco, Robert M., 3,826,853.
Oram, John Gibb: *See*—
Kunz, Robert Irwin; Oram, John Gibb; and Schempp, Eberhard G., 3,826,539.
Organisation Europeenne de Recherches Spatiales: *See*—
Pera, Luigi, 3,826,990.
Orlankini, Bruno; Um, Taesung; and Larson, Andrew H., to Bunker Hill Company, The. Sulfuric acid purification process. 3,826,819, Cl. 423-531.000.
O'Rourke, Anne Cecile; and Kent, John Scott, to Syntex (R.S.A.) Inc. Stabilized prostaglandin preparations. 3,826,823, Cl. 424-80.000.
O'Rourke, John C., to TRW, Inc. Flexible submergible electric motor. 3,826,936, Cl. 310-87.000.
Orton, Hal L.; Vanausdal, George Duane; and Rowley, Robert A. Device for pulling arrowheads from implanatation in solid objects. 3,826,471, Cl. 254-131.000.
Osborne, Harris Dean: *See*—
Lewis, George E.; Brown, Albert W.; and Osborne, Harris Dean, 3,826,062.
Oshima, Masataka: *See*—
Shimauchi, Shiro; Minemura, Norihiro; Matsui, Takeshi; Ito, Kenji; Shima, Takeo; Kawase, Shoji; and Oshima, Masataka, 3,826,609.
Osonoi, Kaoru: *See*—
Suzuki, Isamu; Nakahara, Yasuji; Ichikawa, Kiyoshi; and Osonoi, Kaoru, 3,826,768.
Ota, Jun: *See*—
Arai, Hiroshi; and Ota, Jun, 3,826,541.
Otis Engingeering Corporation: *See*—
Taylor, Frank H., 3,826,462.
Otsuka, Shogo: *See*—
Akabane, Katsumi; and Otsuka, Shogo, 3,826,430.
Ott, A.: *See*—
Mair, Anton Josef, 3,826,338.
Otto, Eugene W.: *See*—
Grounds, Harry C.; and Otto, Eugene W., 3,825,962.
Otto, Lloyd W., to O-Max Industries, Inc. Sharpener attachment for lawn mower blade. 3,826,159, Cl. 76-82.000.
Otto, Oberdan W.: *See*—
Quate, Calvin F.; and Otto, Oberdan W., 3,826,865.
Quate, Calvin F.; Otto, Oberdan W.; and Moll, Nicolas J., 3,826,866.
Owens- Illinois, Inc.: *See*—
Anderson, Cylde G., 3,826,710.
Owens-Corning Fiberglas Corporation: *See*—
Gelin, Robert J., 3,826,418.
Sears, James H.; and Jones, Bernard H., 3,826,276.
Uffner, William E., 3,826,074.
Varrasso, Eugene C., 3,826,903.
Owens-Illinois, Inc.: *See*—
Dietz, Earl D., 3,826,778.
Hall, Dallas P.; and Yoldas, Bulent E., 3,826,635.
Taylor, Larry K., 3,826,178.
Oy Tampella AB: *See*—
Nykopp, Erik A., 3,826,713.
Pachmayr, Frank A. Direct reading gun sight adjustment. 3,826,012, Cl. 33-246.000.
Packard, Norman M., to International Harvester Company. Ring manufacture, productive of line contact seal. 3,826,508, Cl. 277-216.000.
Page, Richard W. Dental chair. 3,826,531, Cl. 297-188.000.
Paine, Anthony Alan, to National Research Development Corporation. Cutting apparatus. 3,826,478, Cl. 266-23.00r.
Pako Corporation: *See*—
Lee, Conrad E., 3,826,300.
Pallos, Ferenc M., to Stauffer Chemical Company. Certain phosphorus containing amidine compounds as insecticides and acaricides. 3,826,830, Cl. 424-211.000.
Palma, Janes R. Archery bow with bowlimb tensioning device. 3,826,239, Cl. 124-23.00r.
Palmaer, Karl V., to KVP Company, Inc. Link configuration for distribution of transverse loads on drive and drag chain. 3,826,150, Cl. 74-250.00r.
Palmer, Wesley G., to Clayton Specialties, Inc. Cart. 3,826,512, Cl. 280-43.120.
Pangalila, Frans V. A., to Flume Stabilization Systems, Inc. Semi-active roll stabilizer for small craft. 3,826,212, Cl. 114-125.000.
Paniagua, Juan Garcia. Method of exterminating insect and animal agricultural pests from infected objects such as plants. 3,826,035, Cl. 43-98.000.
Paolini, Gregory F., to Bethlehem Steel Corporation. Refractory mix for patching the refractory lining in a blast furnace casting floor network. 3,826,662, Cl. 106-56.000.
Paradyne Corporation: *See*—
Weathers, Luther V.; Nordling, Karl I.; and Ruffner, Ronald C., 3,826,908.
Pare, Robert Lee. Leaf spring pavement joint seal. 3,826,583, Cl. 404-67.000.
Pareja, Ramon, to Lear Siegler, Inc. Jet agitator assembly. 3,826,474, Cl. 259-4.000.
Parenti, Alvin L.: *See*—
Root, Glenn M.; Root, Ronald G.; Parenti, Alvin L.; and Sullivan, Arthur J., 3,825,965.
Parikh, Gokaldas C., to United States of America, Navy. Detection and titration of viruses and antibodies using latex. 3,826,613, Cl. 23-230.00b.
Paris American Corporation: *See*—
Keating, James L., 3,826,407.
Parke, Davis & Company: *See*—
Hirai, Michihiro; and Shimizu, Toyokazu, 3,826,666.
Parker-Hannifin Corporation: *See*—
Eschbaugh, John T., 3,826,523.
Pasbrig, Max, to Lacrex Brevetti S.A. Means for use in conjuction with a carburetor of an internal combustion engine for improving the combustion of fuel. 3,826,235, Cl. 123-141.000.
Passavant-Werke Michelbacher Hutte: *See*—
Busse, Oswald; and Klesper, Hugo, 3,826,374.
Pastor, Antonio C.: *See*—
Pastor, Richardo C.; and Pastor, Antonio C., 3,826,817.
Pastor, Richardo C.; and Pastor, Antonio C., to Hughes Aircraft Company. Metal halides with low hydroxyl ion contamination. 3,826,817, Cl. 423-499.000.
Patterson, John Howard: *See*—
Hardwick, Bruce Alfred; and Patterson, John Howard, 3,826,809.
Patz, Paul. Hopper and feed leveler for a tapered bed conveyor. 3,826,354, Cl. 198-171.000.
Paufve, Eldred H., to Singer, Company, The. Special effect generator for a simulator visual system. 3,826,864, Cl. 178-6.800.
Pavena AG: *See*—
Naegeli, Werner, 3,825,974.
Pawlowski, Stanislaw: *See*—
Grylicki, Miroslaw; Nadachowski, Franciszek; and Pawlowski, Stanislaw, 3,826,664.
Paynter, John: *See*—
Hammer, Edward E.; and Paynter, John, 3,826,946.
Peberdy, Roland, to Bently Engineering Company Limited, The. Circular knitting machine suction takeup. 3,826,111, Cl. 66-14.000.
Pegels, Abraham A.; and Wijffels, Joannes B., to Shell Oil Company. Process for the catalytic treatment of hydrocarbon oils. 3,826,737, Cl. 208-143.000.
Pelet, Pierre A.; Bouyssounouse, Bernard; and Hass, Fritz, to PST Company. Sign forming apparatus, method and die for use therein. 3,826,167, Cl. 83-171.000.
Pemberton, Troy J., to Phillips Petroleum Company. Simplified procedure for tuning pid controllers. 3,826,887, Cl. 219-497.000.
Pendrey, Arthur Legrand: *See*—
Hill, Thomas Burton, Jr.; and Pendrey, Arthur Legrand, 3,827,068.
Penn, William H.; and Eicher, Gerald J., to National Union Electric Corporation. Retractable electric cord reel. 3,826,879, Cl. 191-12.400.
Pennsylvania Engineering Corporation: *See*—
Kunz, Robert Irwin; Oram, John Gibb; and Schempp, Eberhard G., 3,826,539.
Pennwalt Corporation: *See*—
Heitman, Joseph Beckwith, 3,826,818.
Pensabene, Saverio F., to General Electric Company. Nickel electrode cell with improved high temperature charge acceptance. 3,826,684, Cl. 136-28.000.
Penzel, Herbert W. Device for simulating knot in necktie or the like. 3,825,955, Cl. 2-150.000.
PEPRO, Societe pour le Developpement et la: *See*—
Moulin, Louis; Confino, Maurice; and Godard, Gerard, 3,826,822.
Pera, Luigi, to Organisation Europeenne de Recherches Spatiales. Anti phase-ambiguity for phase-shift keying binary transmission systems. 3,826,990, Cl. 329-50.000.
Pereau, Robert L., to Smith International, Inc. Drilling apparatus. 3,826,317, Cl. 175-162.000.
Perham, Roscoe E., to United States of America, Army. Quick-acting, self-resetting fluid pressure release valve assembly. 3,826,280, Cl. 137-624.140.
Perry, Robert H., to Westinghouse Electric Corporation. Fail-safe optically coupled logic networks. 3,826,930, Cl. 307-311.000.
Pershing, Roscoe Louis; and Romig, Bernard Edwin, to Deere & Company. Skirted helmet. 3,825,952, Cl. 2-3.00r.

Peruglia, Marco, to Fiat Societa Per Azioni. Vehicle anti-skid braking system. 3,826,542, Cl. 303-21.00f.

Pet Chemicals, Incorporate: *See—*
Duffey, Thomas E.; and Coleman, William R., 3,826,232.

Peter, Attila: *See—*
Mandzsu, Jozsef; Jagicza, Laszlo; Peter, Attila; Kellner, Laszlo; and Jodal, Sandor, 3,827,042.

Petersen, Gerald Alger. Excavator tooth, holder and retainer. 3,826,024, Cl. 37-142.00a.

Pethick, Ford Crago. Plaything comprising movable supports and a running linear flaccid line. 3,826,493, Cl. 273-1.00r.

Petrucco, Richard J.; and Schick, John W., to Mobil Oil Corporation. Method for controlling water transpiration in plants. 3,826,671, Cl. 117-3.000.

Pevararo, Cesare, to Societa' per La Strada Guidata S.r.l. Tracked vehicle system. 3,826,197, Cl. 104-130.000.

Pfaffle, Ernst, to Sickinger, Hans, Company. Coil binding machine. 3,826,290, Cl. 140-92.700.

Pfaudler-Werke AG: *See—*
Deichelmann, Hermann; and Veit, Herrmann, 3,826,980.

Pfeffer, Simon: *See—*
Gebhard, Manfred; Nitzsche, Curt; and Pfeffer, Simon, 3,826,772.

Pflaum, Norman C., 1/2 to Benson, Richard. Electromagnetic gradiometer. 3,826,973, Cl. 324-3.000.

Phelon Magnagrip Co., Inc.: *See—*
Phelon, Russell E., 3,827,021.

Phelon, Russell E., to Phelon Magnagrip Co., Inc. Magnet gripping fixture. 3,827,021, Cl. 335-285.000.

Philipp, Warren H.; Marsik, Stanley J.; and May, Charles E., to United States of America, National Aeronautics and Space Administration. Production of pure metals. 3,826,726, Cl. 204-157.10h.

Phillips, David P.: *See—*
Sattler, James L.; and Phillips, David P., 3,826,271.

Phillips Petroleum Company: *See—*
Pemberton, Troy J., 3,826,887.
Quigg, Harold T.; and Schirmer, Robert M., 3,826,077.
Quigg, Harold T., 3,826,078.
Quigg, Harold T.; and Schirmer, Robert M., 3,826,079.
Wright, Roy F., 3,826,776.

Phipps, Graham Harold George: *See—*
Behenna, Joshua John; and Phipps, Graham Harold George, 3,826,945.

Pickard, John E.: *See—*
Weber, Charles H.; and Pickard, John E., 3,826,651.

Pickering Industries, Inc.: *See—*
Sutherlan, William B., 3,826,207.

Pickett, Charles G.; and Chadha, Desh D., to Bio-Medical Sciences, Inc. Temperature indicator. 3,826,141, Cl. 73-356.000.

Pieper, Helmut; and Umlauf, Gunther. Current supply device for ceramic electrodes. 3,826,858, Cl. 13-6.000.

Pilot Man-men Hitsu Kabushiki Kaisha: *See—*
Shindo, Masashi, 3,826,485.

Pinezich, John R.: *See—*
Carlson, Andrew L.; and Pinezich, John R., 3,826,376.

Pioneer Electronic Corporation: *See—*
Tsukagoshi, Tsunehiro, 3,826,440.

Pioneer Magnetics, Inc.: *See—*
Wilkinson, Bruce L.; and Stolowitz, Michael C., 3,826,967.

Pittis, Bertram H.; and Cipas, Albert, to Dow Jones & Company, Inc. Printing device. 3,826,191, Cl. 101-103.000.

Pittman, Tobe A.: *See—*
Woods, Jack L.; and Pittman, Tobe A., 3,826,723.

Plastics, Inc.: *See—*
Pomroy, James F., 3,826,912.

Platt, Walter A.; and Reynolds, Gibson, to Bendix Corporation, The. Quadruple redundant closed loop electro-hydraulic servo system. 3,826,174, Cl. 91-363.00a.

Plempel, Manfred: *See—*
Buchel, Karl Heinz; Meiser, Werner; Plempel, Manfred; and Metzger, Carl, 3,826,836.
Timmler, Helmut; Buchel, Karl-Heinz; and Plempel, Manfred, 3,826,837.

Pliml, Frank V., Jr.: *See—*
McClung, Robert A.; and Pliml, Frank V., Jr., 3,826,424.

Plough, Charles T.; Tvedt, Jan Otto; Arts, Marcus; Eastwood, H. Keith; and Woo, Frank, to Multi-State Devices Ltd. Temperature compenstaed thermal relay device. 3,826,924, Cl. 307-117.000.

Pneumatic Scale Corporation: *See—*
Vergobbi, Robert W., 3,826,060.

Podosek, Edward, to National Blank Book Company, Inc. Loose leaf binder file hanger devices. 3,826,582, Cl. 402-4.000.

Polaroid Corporation: *See—*
Cieciuch, Ronald F. W.; and Simon, Myron S., 3,826,801.

Polese, James P.; and McNees, Sterling G., to Varian Associates. Coaxial power grid tube having improved internal lead structures. 3,826,948, Cl. 314-293.000.

Pommer, Ernst-Heinrich; and Will, Hannelore, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Agent for keeping cut flowers fresh. 3,826,639, Cl. 71-68.000.

Pommerening, Uwe A.: *See—*
Gueldenpfennig, Klaus; Pommerening, Uwe A.; and Russell, Stanley L., 3,826,876.

Pomroy, James F., to Plastics, Inc. Light bulb guard. 3,826,912, Cl. 240-102.00r.

Popplewell, James M.: *See—*
Pryor, Michael J.; and Popplewell, James M., 3,826,627.
Pryor, Michael J.; and Popplewell, James M., 3,826,629.

Portage Electric Products, Inc.: *See—*
Wehl, Glenn E., 3,827,014.

Porter, Clark A., to Monsanto Company. Method for increasing the sucrose content of growing plants. 3,826,641, Cl. 71-86.000.

Porter, H.K., Company, Inc.: *See—*
Spiringer, Arthur James, 3,826,881.

Posselt, Klaus; and Offermanns, Heribert, to Deutsche Gold-und Silber-Scheideanstalt vormals-Roessler. Basic thienylalkanes for increasing blood flow. 3,826,838, Cl. 424-275.000.

Potain: *See—*
Noly, Jean, 3,826,342.

Preisig, Roland, to Bobst, J., & Fils S.A. Method and apparatus for interleaving a strip of material between superposed packets. 3,826,058, Cl. 53-14.000.

Preisig, Roland; and Frei, Arthur, to Bobst, J., & Fils, SA. Article selection and separation apparatus. 3,826,348, Cl. 298-34.000.

Prener, Jerome S.: *See—*
Kingsley, Jack D.; and Prener, Jerome S., 3,826,679.

Presto Products Incorporated: *See—*
Heckrodt, William F., 3,826,361.

Prieur, Lucien Robert, to Societe Industrielle Honeywell Bull (Societe Anonyme). Device for the displacement of magnetic read/write heads. 3,827,081, Cl. 360-105.000.

Prince, Amos C. Articulated boat launching trailer. 3,826,391, Cl. 214-506.000.

Prince Corporation: *See—*
Wunder, William G., 3,826,302.

Pritschow, Gunter, to Licentia Patent-Verwaltungs-GmbH. Device for measuring a difined force component. 3,826,131, Cl. 73-141.00a.

Process Industries, Incorporated: *See—*
Filer, Burt K., 3,826,938.

Procter & Gamble Company, The: *See—*
Amneus, John S.; and Leisring, Justin G., 3,826,363.
Lowrey, Erlend Rupert, 3,826,720.

Propst, Robert L.; and Kelley, James O., to Miller, Herman, Inc. Stackable drawer and cover. 3,826,550, Cl. 312-107.000.

Pryor, Michael J.; and Popplewell, James M., to Olin Corporation. Decorative composite articles. 3,826,627, Cl. 29-195.000.

Pryor, Michael J.; and Popplewell, James M., to Olin Corporation. Products formed of glass or ceramic-metal composites. 3,826,629, Cl. 29-195.000.

PST Company: *See—*
Pelet, Pierre A.; Bouyssounouse, Bernard; and Hass, Fritz, 3,826,167.

Puig, Antonio A. Automatic security communications system. 3,826,875, Cl. 179-37.000.

Pujol, Carlos Oliver, to Oliver and Batlle, S.A. Apparatus for dispersing pigments in a liquid phase. 3,826,435, Cl. 241-171-.

Pulliam, George R.: *See—*
O'Donnell, Cedric F.; and Pulliam, George R., 3,827,036.

Purcell, Robert J.; and Wehr, Kenneth E., to Caterpillar Tractor C. Track suspension assembly. 3,826,325, Cl. 180-9.540.

Pusch, Gunter, to Industrie-Automation GmbH & Co. Electromechanical power or pressure measuring transformer. 3,826,130, Cl. 53-141.00a.

Puttonen, Risto V.: *See—*
Valkama, Aarne J.; Sihvola, Eero; and Puttonen, Risto V., 3,826,905.

Quan, Peter Michael: *See—*
Ashworth, Brian Thomas; Crawford, Kenneth; and Quan, Peter Michael, 3,826,779.

Quate, Calvin F.; and Otto, Oberdan W., to Leland Stanford Junior University, Board of Trustees of. Method and system for acoustoelectric scanning. 3,826,865, Cl. 178-7.100.

Quate, Calvin F.; Otto, Oberdan W.; and Moll, Nicolas J., to Leland Stanford Junior University, Board of Trustees of. Method and sytem for acousto-electric scanning. 3,826,866, Cl. 178-7.100.

Quest Electronics Corporation: *See—*
Wurm, Robert J.; and Bergson, Arnold A., 3,826,870.

Questor Corporation: *See—*
Hardick, Aldin; House, Delbert; and Martin, Alvin M., 3,825,988.

Quigg, Harold T.; and Schirmer, Robert M., to Phillips Petroleum Company. Method of selectively introducing and heating three streams of air into a combustor. 3,826,077, Cl. 60-39.020.

Quigg, Harold T., to Phillips Petroleum Company. Combustion process with selective heating of combustion and quench air. 3,826,078, Cl. 60-39.020.

Quigg, Harold T.; and Schirmer, Robert M., to Phillips Petroleum Company. Combustion method with selective cooling and controlled fuel mixing. 3,826,079, Cl. 60-39.060.

Quilliam, Robert Mark, to Marconi Company Limited, The. Semi-conductor memory device arrangements. 3,827,033, Cl. 340-173.00r.

Rabinowitz, Azriel J.; and Cama, John J., to United States of America, Navy. Safety mechanism for military fuzes. 3,826,194, Cl. 102-79.000.

Raboin, Robert G., to General Electric Company. Split locking piece for circumferential dovetail on turbine wheel. 3,826,592, Cl. 416-222.000.

Racobs, Charles R. Door securing apparatus. 3,826,117, Cl. 70-416.000.

Raddi, William J.; and Johnson, Robert William, to ESB Incorporated. Apparatus for sensing physiological potentials. 3,826,246, Cl. 128-2.06e.

Rademacher, Friedrich, to Holstein & Kappert Maschinenfabrik Phonix GmbH. Mechanism for moving centering members for containers in container filling machines. 3,826,294, Cl. 141-258.000.

Radway, Jerrold E.: *See—*
Cook, Henry A.; and Radway, Jerrold E., 3,826,812.

Rajan, Jai R. N.: *See—*
Anderson, Hugh G.; Rajan, Jai R. N.; and Morse, Wade H., 3,826,544.

Rambauske, Werner R.: *See—*
McFarland, Philip J.; and Rambauske, Werner R., 3,826,911.

Rambauske, Werner R., to Raytheon Company. Catoptric lens arrangement. 3,827,059, Cl. 350-294.000.

Ramsey, Joe B., to Acme General Corporation. Detent for locking knob of a privacy lock. 3,826,527, Cl. 292-359.000.

Ranco Incorporated: *See—*
Lorenz, Jerome L., 3,826,963.

Ransburg Corporation: *See—*
Scharfenberger, James A.; and Drum, Edward W., 3,826,425.

Rasberry, Phillip P.; and Whitaker, Donald R., to United States of America, Air Force. Mechanical rotary tilt stage. 3,826,558, Cl. 350-90.000.

Rasmussen, M. Per Hjorth: *See—*
Demangeon, M. Yvon; and Rasmussen, M. Per Hjorth, 3,826,749.

Ratcliff, Bruce E.: *See—*
Ratcliff, Ralph A.; and Ratcliff, Bruce E., 3,826,469.

Ratcliff, Ralph A.; and Ratcliff, Bruce E. Over-center load binder with variable mechanical advantage. 3,826,469, Cl. 254-78.000.

Rawcliffe, Gordon Hindle: *See—*
Broadway, Alexander Richard William; Fong, William; and Rawcliffe, Gordon Hindle, 3,826,960.

Rawson, Robert E. Putting stroke analyser. 3,826,503, Cl. 273-183.00c.

Ray, Richard C.: *See—*
Merkin, Bill C.; Tobias, Michael J.; Ray, Richard C.; and LaBarge, Robert L., 3,826,048.

Raycon Corporation: *See—*
Check, John M.; and Rupert, Gary F., 3,826,484.

Raytheon Company: *See—*
McFarland, Philip J.; and Rambauske, Werner R., 3,826,911.
Rambauske, Werner R., 3,827,059.

RCA Corporation: *See—*
Binder, Wolfgang Max, 3,826,047.
Blust, Henry Leo; and Lindburg, Norman Lee, 3,826,634.
Coleman, Clyde Franklin, 3,825,994.
Foldes, Peter, 3,827,051.

Reactor Centrum Nederland: *See—*
Van Der Koogh, Gerbrand; and Bernards, Antonius P., 3,826,918.

Read, Arthur, to Universal Tag Company Limited. Eartags. 3,826,030, Cl. 40-301.000.

Reddy, Redreddy Sukumar: *See—*
Baugirdas, Kristupas; and Reddy, Redreddy Sukumar, 3,826,042.

Redifon Limited: *See—*
Lobb, Daniel Richard; and Spooner, Archer Michael, 3,826,557.

Reed Tool Company: *See—*
Bassinger, Ross, 3,826,316.

Rees, Thomas C., to Sherwin-Williams Company, The. Encapsulation of organic pigments. 3,826,670, Cl. 106-308.00q.

Reiches, Aaron J. Use of vitamin B6 for enlarging sub-normal hair bulbs and enhancing hair growth therefrom. 3,826,834, Cl. 424-363.000.

Reighard, Alan B.: *See—*
Baker, Robert G.; and Reighard, Alan B., 3,826,224.

Reliance Electric Company: *See—*
Loshbough, Richard C., 3,826,319.

Renard, Remi H.: *See—*
Ryer, Jack; and Renard, Remi H., 3,826,745.

Renshaw, John H.: *See—*
Currey, Norman S.; and Renshaw, John H., 3,826,450.

Rexnord Inc.: *See—*
Van Zon, Jacob; and Lake, Russel J., 3,826,352.

Reynolds, Frank J. Hollow tube of variable exterior dimensions. 3,826,285, Cl. 138-103.000.

Reynolds, Gibson: *See—*
Platt, Walter A.; and Reynolds, Gibson, 3,826,174.

Reynolds Metals Company: *See—*
Levy, Sander A., 3,826,688.

Rheiner Maschinenfabrik Windhoff Akt.-Ges.: *See—*
Bucksch Herbert, 3,826,195.

Rhody, Erma L.: *See—*
Rhody, Howard A., 3,826,216.

Rhody, Howard A., 1/2 to Rhody, Erma L. Water vessel propelled by motorized land vehicle. 3,826,216, Cl. 115-.50a.

Rhone-Progil: *See—*
Hovasse, Christian; and Allemnd, Pierre, 3,826,665.

Richards, John C., to General Electric Company. Variable diffuser centrifugal pump shutter control. 3,826,586, Cl. 415-42.000.

Richardson, Edwin A.; and Scheuerman, Robald F., to Shell Oil Company. Self-neutralizing well acidizing. 3,826,312, Cl. 166-307.000.

Richardson, George William: *See—*
Bleinberger, Warren Edward; Franke, Edward Louis, Jr.; Galloway, John Vernon; Richardson, George William; Thomas, Albert Richard; and Thomas, Palmer Doyle, 3,826,690.

Richter, Hans, to Keller & Knappich Augsburg, Zweigniederlassung der Industrie-Werke Karlsruhe Augsburg Aktiengesellschaft. Automatic handling apparatus. 3,826,383, Cl. 214-1.0bd.

Riebandt, Reinhold W. Self steering system. 3,826,213, Cl. 114-144.00c.

Rieter Machine Works Ltd.: *See—*
Staeheli, Paul, 3,825,975.

Riggs, Olen Lonnie, Jr.; and Surtees, Lyll Stanley. Method of removing a metal contaminant. 3,826,724, Cl. 204-140.000.

Rigney, Edward T.; Benson, Richard A.; and Edgerton, Bradford W., to Trans-Sonics, Inc. Load weighing system for crans with rotatable booms. 3,826,321, Cl. 177-210.000.

Rikagaku Kenkyusho: *See—*
Horikoshi, Koki; Ikeda, Yonosuke; and Tanaka, Yoshitake, 3,826,715.

Rio, Arturo; Cerrone, Marcello; and Saini, Alberto, to Societa' Italiana per Azioni per la Produzione di Calci e Cementi di Segni. Method for preparing polymer impregnated cement articles. 3,826,680, Cl. 117-119.600.

Rio Co., Ltd.: *See—*
Iwasaki, Shingi; and Obata, Kiyoshi, 3,826,952.

Ristance Wire, Inc.: *See—*
Dugger, Richard P., 3,826,891.

Rittenhouse, Howard E., to Crane Co. Thrust bearing. 3,826,138, Cl. 73-258.000.

Rivers, William C., Jr. Transport container. 3,826,398, Cl. 220-1.500.

Roberts, Charles B.; and Brower, Frank M., to Dow Chemical Company, The. Preparation of non-solvated crystalline alpha-aluminum hydride. 3,826,820, Cl. 423-645.000.

Roberts, Joseph Normand; and Lovell, Walter. Plant stem protector. 3,826,040, Cl. 46-30.000.

Robitschek, Paul: *See—*
Christensen, Ross Leon; and Robitschek, Paul, 3,826,770.

Rockwell International Corporation: *See—*
Molina, Orlando G., 3,826,127.
Molina, Orlando G., 3,826,917.
O'Donnell, Cedric F.; and Pulliam, George R., 3,827,036.
Watson, George A., 3,827,046.

Rody, Jean; and Lind, Hanns, to Ciba-Geigy Corporation. Protective agents against light rays. 3,826,752, Cl. 252-300.000.

Rognmo, Tore; and Sjotun, Kvrre, to A/S Kongsberg Vapenfabrik Kirkegardsveien. Method for supporting a rotating body in generators for missiles and a supporting arrangement for supporting such bodies. 3,826,193, Cl. 102-70.20g.

Rohe Scientific Corporation: *See—*
Natelson, Samuel, 3,826,622.

Roland Offsetmaschinenfabrik Faber & Schleicher AG: *See—*
Abendroth, Paul, 3,826,486.

Romick, Jerome M. Unit-dose medication handling system. 3,826,222, Cl. 116-121.000.

Romig, Bernard Edwin: *See—*
Pershing, Roscoe Louis; and Romig, Bernard Edwin, 3,825,952.

Rooney, Peter John: *See—*
Karl, Walter; Rooney, Peter John; and Ulk, Alexander, 3,826,861.

Root, Glenn M.; Root, Ronald G.; Parenti, Alvin L.; and Sullivan, Arthur J., to Esso Research and Engineering Company. Apparatus for cleaning tire inner-liners. 3,825,965, Cl. 15-121.00d.

Root, Ronald G.: *See—*
Root, Glenn M.; Root, Ronald G.; Parenti, Alvin L.; and Sullivan, Arthur J., 3,825,965.

Ross, Charles,. Locking knee joint for orthopedic leg brace. 3,826,251, Cl. 128-80.00f.

Ross, Charles Forbes, to Evans Medical Limited. Closures for containers. 3,826,221, Cl. 116-114.00v.

Ross, Donald R., Sr., to U-S Safety Trolley Corporation. Electric power transmission system. 3,826,880, Cl. 191-25.000.

Ross, Gerald D.; and Cromwell, Douglas E., to United States of America, Air Force. Mechanical door interlock system. 3,826,520, Cl. 292-30.000.

Ross, Hugh C. Solid-state high impedance meter system. 3,826,981, Cl. 324-72.500.

Ross, Stuart T.: *See—*
Withers, James G., Jr.; Dean, Harvey R.; and Ross, Stuart T., 3,826,304.

Rotax Limited: *See—*
Magill, George Maurice Martin, 3,826,148.
Sharpe, Raymond; and Triffit, James Christopher Herbert, 3,826,147.

Roth, Lee J.: *See—*
Roth, Lee J., 3,826,357.

Roth, Lee J., to Roth, Lee J. Display package. 3,826,357, Cl. 206-45.330.

Rout, Cecil H.: *See—*
Garfield, Gerald; and Rout, Cecil H., 3,826,888.

Rowe, Edgar R.; and Fox, William R., to Van Dorn Company. Molded plastic pail. 3,826,404, Cl. 220-70.000.

Rowley, Robert A.: *See—*
Orton, Hal L.; Vanausdal, George Duane; and Rowley, Robert A., 3,826,471.

Roy, Alexander Rose, to De Beers Consolidated Mines Limited. Coating for diamonds. 3,826,630, Cl. 29-195.000.

Rubey, Ulyss Ray, to United Wiring and Manufacturing Co., Inc. Method of connecting electrical component. 3,825,999, Cl. 29-626.000.

Rudenko, Nikolai Antonovich: *See—*
Galkin, Pavel Vladimirovich; and Rudenko, Nikolai Antonovich, 3,826,289.

Rudine, Kenneth M. Motor-powered self-opening and closing ventilators. 3,826,183, Cl. 98-116.000.

Rue, Howard M., to Sun Oil Company of Pennsylvania. Electrolytic copper release agent. 3,826,668, Cl. 106-285.000.

Ruff, Gotfried G. Dump body for pick-up truck. 3,826,534, Cl. 298-1.00a.

Ruffner, Ronald C.: *See—*
Weathers, Luther V.; Nordling, Karl I.; and Ruffner, Ronald C., 3,826,908.

Ruggles, Kay, to Directional Industries, Incorporated. Modular furniture or like articles and modular units therefor. 3,826,206, Cl. 108-64.000.

Rulseh, Roy M., to Aqua-Chem, Inc. Method and apparatus for chemical waste disposal. 3,826,604, Cl. 431-12.000.

Rupert, Gary F.: *See—*
Check, John M.; and Rupert, Gary F., 3,826,484.

Rushin, Eugene. Tri-square drawing board. 3,826,006, Cl. 33-76.00r.

Ruskin, Asa P.; and Gould, Wilbur J. Pulmonary achievement trainer. 3,826,247, Cl. 128-2.080.

Russell, Stanley L.: *See—*
Gueldenpfennig, Klaus; Pommerening, Uwe A.; and Russell, Stanley L., 3,826,876.

Russell, William Thornton. Method of producing fibrous silicate products. 3,826,703, Cl. 156-189.000.

Russell-French, Harry M., to Budd Company, The. Pneumatically sprung railway car truck. 3,826,202, Cl. 105-182.00r.

Rutherford, Harry Wayne. 360 Spray apparatus with means for changing spray pattern. 3,826,427, Cl. 239-186.000.

Ryer, Jack; and Renard, Remi H., to Esso Research and Engineering Company. Compositions containing metal dialkyl dithiophosphates are inhibited against haze and precipitates by amine salts of mixed acid phosphates. 3,826,745, Cl. 252-32.0fe.

Sable Freres International: *See—*
De Longchamp, Jacques-Albert Huot, 3,826,457.

Saeki, Masnori: *See—*
Suyama, Tsunesuke; Saeki, Masnori; and Okada, Ryuzo, 3,826,845.

Sagamo Weston Limited: *See—*
Thomas, David Ellis, 3,827,009.

Saini, Alberto: *See—*
Rio, Arturo; Cerrone, Marcello; and Saini, Alberto, 3,826,680.

Saint-Gobain Industries: *See—*
Lecourt, Jean Albert, 3,826,637.

Sakai, Kiyohide: *See—*
Sawazaki, Hajime; Sakai, Kiyohide; Tsutsumi, Hiroshi; Sumitomo, Yasusuke; Niwa, Kazuo; and Inaba, Eisaku, 3,826,699.

Sakalys, Vytautas S., to Brier Manufacturing Company. Zipper construction. 3,825,978, Cl. 24-205.13r.

Sakamaki, Hisashi; and Kimura, Yoshimasa, to Canon Kabushiki Kaisha. Exposure safeguarding device for photocopying machine. 3,826,569, Cl. 355-14.000.

Sakamoto, Yoshihiro: *See—*
Nagashima, Shinichiro; Tsuchiya, Kaichi; Sakamoto, Yoshihiro; Yamakami, Hiroshi; and Tomari, Seiji, 3,826,747.

Sakumoto, Hideki: *See—*
Yabu, Toshiomi; Sakumoto, Hideki; and Namoto, Yoshiteru, 3,826,447.

Salabarria, Miguel A.: *See—*
Mye, James O.; Salabarria, Miguel A.; and Westmoreland, David H., 3,826,064.

Salcman, Michael; and Bak, Martin J., to United States of America, Department of Health Education and Welfare. Thumbtack microelectrode and method of making same. 3,826,244, Cl. 128-2.10e.

Salem Sand and Gravel Company: *See—*
Hill, Thomas Burton, Jr.; and Pendrey, Arthur Legrand, 3,827,068.

Samuelson, Bruce E.: *See—*
Grierson, Keith J.; and Samuelson, Bruce E., 3,826,935.

Samuelsson, Per: *See—*
Karlsson, Gosta; Samuelsson, Per; and Hammarlund, Per Erik, 3,826,646.

Sanborn, Charles H., III: *See—*
Jones, Charles V.; Alvey, James W.; and Sanborn, Charles H., III, 3,826,170.

Sandoz Ltd.: *See—*
Doepfner, Wolfgang, 3,826,824.

Sandoz-Wander Inc.: *See—*
Anderson, Paul L., 3,826,832.

Sandvik Aktiebolag: *See—*
Soderberg, Rolf Harald; and Helmer, Clas Erik, 3,826,649.

Sandvikens Jernverks Aktiebolag: *See—*
Carlen, Jan-Christer Henric Ovesson; and Bergqvist, Claes Bertil, 3,826,697.

Sankyo Company Limited: *See—*
Suyama, Tsunesuke; Saeki, Masnori; and Okada, Ryuzo, 3,826,845.

Sarantakis, Dimitrois; McGregor, William H.; and McKinley, Wayne A., to American Home Products Corporation. P-glu-his-leu-arh-progly-NH_2 and intermediates. 3,826,796, Cl. 260-112.500.

Sato, Hideo: *See—*
Masuda, Yoshinori; Sato, Hideo; Kobayashi, Tadahiro; and Terada, Yoshiaki, 3,826,712.

Sato, Uichi: *See—*
Murata, Kazuo; Ikeda, Hirotaka; Ashida, Katsuzi; and Sato, Uichi, 3,826,369.

Satomura, Masato, to Fuji Photo Film Co., Ltd. Novel reactive cinnamate polymers. 3,826,784, Cl. 260-47.0ua.

Sattler, James L.; and Phillips, David P., to Wildwood Products, Inc. Awning construction. 3,826,271, Cl. 135-5.0at.

Sawazaki, Hajime; Sakai, Kiyohide; Tsutsumi, Hiroshi; Sumitomo, Yasusuke; Niwa, Kazuo; and Inaba, Eisaku, to Tokyo Shibaura Electric Co., Ltd. Method for manufacturing a semiconductor integrated circuit isolated through dielectric material. 3,826,699, Cl. 48-175.000.

Sawson, Thomas J., to United States of America, Navy. Metal, matrix-fiber composite armor. 3,826,172, Cl. 89-36.00a.

Scaglione, Paul J. Fluid flow control valve. 3,826,466, Cl. 251-192.000.

Schanzer, Oswald: *See—*
Holinski, Rudiger; and Schanzer, Oswald, 3,826,744.

Schaper, Raymond Joseph: *See—*
Hoover, Merwin Frederick; Sinkovitz, Gloria Dimarco; and Schaper, Raymond Joseph, 3,826,767.

Scharfenberger, James A.; and Drum, Edward W., to Ransburg Corporation. Electrstatic apparatus. 3,826,425, Cl. 239-15.000.

Scharton, Terry D., to Bolt, Beranek and Newman, Inc. Method of and apparatus for reducing sound generated by surfaces in fluid jet steams and the like. 3,826,331, Cl. 181-33.0hc.

Schempp, Eberhard G.: *See—*
Kunz, Robert Irwin; Oram, John Gibb; and Schempp, Eberhard G., 3,826,539.

Scheuerman, Robald F.: *See—*
Richardson, Edwin A.; and Scheuerman, Robald F., 3,826,312.

Schick, John W.: *See—*
Petrucco, Richard J.; and Schick, John W., 3,826,671.

Schick, John W.; and Cushman, Donald R., to Mobil Oil Corporation. Breaking of oil-in-water emulsions. 3,826,725, Cl. 204-149.000.

Schindler, Walter; Schmid, Erich; and Zuest, Armin, to Ciba-Geigy Corporation. CNS-depressant compositions and method with [4-10, 11-dihydrodibenz] [b,f] oxepin-10-yl-1-piperazinyl alkyl-3-alkyl-2-imidazolidinones. 3,826,833, Cl. 426-65.000.

Schirmer, Robert M.: *See—*
Quigg, Harold T.; and Schirmer, Robert M., 3,826,077.
Quigg, Harold T.; and Schirmer, Robert M., 3,826,079.

Schladitz, Hermann J., to Schladitz-Whiskers A.G. Electrical fluid heating device. 3,826,895, Cl. 219-382.000.

Schladitz-Whiskers A.G.: *See—*
Schladitz, Hermann J., 3,826,895.

Schlesinger, Sheldon I., to American Can Company. Epoxy photopolymer duplicating stencil. 3,826,650, Cl. 96-35.100.

Schlotterer, John C.; and Smith, Lionel S., Jr., to Westinghouse Electric Corporation. Memory and program protection system for a digital computer system. 3,827,029, Cl. 340-172.500.

Schlumberger Technology Corporation: *See—*
Nicolas, Yves; and Landaud, Andre, 3,826,133.

Schmer, Gottfried: *See—*
Hoffman, Allan S.; and Schmer, Gottfried, 3,826,678.

Schmid, Erich: *See—*
Schindler, Walter; Schmid, Erich; and Zuest, Armin, 3,826,833.

Schmitz, Lothar Peter, to Drum Engineering Co., Limited. Compressor with cartridge assembly. 3,826,597, Cl. 418-131.000.

Schnell, Gunter; and Hohage, Klaus Albert, to Koppers Company, Inc. Cut-off knife for corrugators. 3,826,169, Cl. 83-324.000.

Schnyder, Conrad W.; and Cambiaghi, Danilo, to Neuco Apparatebau AG. Dispenser for hand towelling. 3,826,548, Cl. 312-38.000.

Schoggen, Howard Leon; Holmgren, John Richard; and Harris, Thomas Sanders, Jr., to Buckeye Cellulose Corporation, The. Sheeted cellulose derivative fibers. 3,826,711, Cl. 162-102.000.

Scholfield, Richard P., to Wheeldex Manufacturing Company, Inc. Pivot file. 3,826,549, Cl. 312-59.000.

Schrade, Gerhard. Attachment for ventilating shafts or the like. 3,826,181, Cl. 98-66.000.

Schubert & Salzer Maschinenfabrik Aktiengesellschaft: *See—*
Hoeber, Gerhard; and Landwehrkamp, Hans, 3,826,073.

Schuler, Manfred. Reserve pull rod for scuba tank. 3,826,468, Cl. 251-293.000.

Schultz, Peter C., to Corning Glass Works. Method of forming a light focusing fiber waveguide. 3,826,560, Cl. 350-96.0wg.

Schultz, Robert F.; and Cook, Edward H., Jr., to Hooker Chemical Corporation. Bipolar electrode. 3,826,731, Cl. 204-290.00f.

Schultz, Robert F.; Cook, Edward H., Jr.; and 364203, to Hooker Chemical Corporation. Bipolar electrode. 3,826,732, Cl. 204-290.00f.

Schultz, Robert F.; and Cook, Edward H., Jr., to Hooker Chemical Corporation. Bipolar electrode. 3,826,733, Cl. 204-290.00f.

Schumacher, Frank A.: *See—*
Horvay, Julius B.; and Schumacher, Frank A., 3,826,102.

Schurgin, Herbert L. Microfilm navigation system. 3,826,579, Cl. 356-247.000.

Schwartz, Michel S., to Ariel Creative Corporation. Doors, drawer fronts and like structures for cabinets, closets and furniture. 3,826,551, Cl. 312-140.000.

Schwartz, Robert B.; Banerjea, Tara N.; and Stinson, Donald B., Jr., to Fruehauf Corporation. Jamb construction. 3,826,050, Cl. 52-212.000.

Schwarz, Eckhard C. A., to Kimberly-Clark Corporation. Hydrophilic foam. 3,826,674, Cl. 117-62.200.

Schweikart, Horst, to Gehap Gesellschaft fur Handel und Patentverwertung MbH & Co., KG. Switch arrangement for an optically coupled zero voltage switch. 3,826,925, Cl. 307-133.000.
SCM Corporation: *See—*
Bordenca, Carl; Johnson, Robert P.; and Dorschner, Kenneth P., 3,826,842.
Miller, Harry R., 3,826,345.
Scope Incorporated: *See—*
Brown, Gene T.; and Whiting, John V., 3,826,986.
Scott & Fetzer Company, The: *See—*
MacFarland, Charles H., 3,825,972.
Scott, Frederick P., to King Laboratories, Inc. Material for producing a metallic coating on the inner surfaces of a cathode ray tube. 3,826,645, Cl. 75-.50r.
Scott, Jay R.: *See—*
Koss, George S.; and Scott, Jay R., 3,826,415.
Scott, Jimmie D.: *See—*
Weinstein, Berel; and Scott, Jimmie D., 3,826,142.
Scott, Kenneth Thomas Bartlett: *See—*
Grimes, John Herbert; Scott, Kenneth Thomas Bartlett; and McKenna, Norman James, 3,826,755.
Scott Paper Company: *See—*
Lamplugh, Roland J.; and Triolo, Rocco P., 3,826,763.
Scovill Manufacturing Company: *See—*
Kruger, James; and LePage, Gerard T., 3,826,118.
Scribner, Frank F., to FMC Corporation. Legume harvester with wiped side panels. 3,826,267, Cl. 130-30.00h.
Sears, James H.; and Jones, Bernard H., to Owens-Corning Fiberglas Corporation. Level sensing apparatus. 3,826,276, Cl. 137-389.000.
Sedlak, Michael: *See—*
Simpson, Charles A.; Davis, Robert H.; and Sedlak, Michael, 3,826,620.
Seibicke, Horst: *See—*
Ursel, Eckhard; and Seibicke, Horst, 3,825,971.
Seiffert, Horst: *See—*
Kuhlmann, Franz; Gundlach, Arnold; and Seiffert, Horst, 3,826,204.
Seipp, William H., to Gulf & Western Industries, Inc. Programmable controller using a random access memory. 3,827,030, Cl. 340-172.500.
Sendai Television Broadcasting Corporation: *See—*
Tanaka, Saburo, 3,827,052.
Seng, Koh Chew. Door installations. 3,826,043, Cl. 49-360.000.
Senshu, Haruzo; Koenuma, Masao; and Gibu, Yoshitaka, to Fuji Sokuryoki Seizo Kabushiki Kaisha and Yugen Kaisha Senshu Sekkei Jimusho. Drawing apparatus for perspective views. 3,826,007, Cl. 33-77.000.
Serbu, Gideon P. Magnetic closure. 3,827,019, Cl. 335-285.000.
Sescosem-Societe Europeenne de Semiconducteurs et de Microelectronique: *See—*
Croset, Michel, 3,826,956.
Shaffer, Ronald L.; and Stambaugh, Frederic P., to Beloit Corporation. Flexible adapter for conveying material from extruder to die. 3,826,602, Cl. 425-378.000.
Shankman, Martin. Seating device convertible into a bed. 3,825,959, Cl. 5-8.000.
Sharpe, Andrew Jackson, Jr.: *See—*
Szabo, Miklos Tamas; Sharpe, Andrew Jackson, Jr.; and Sherwood, Nancy Spicer, 3,826,311.
Sharpe, Raymond; and Triffit, James Christopher Herbert, to Rotax Limited. Constant speed hydraulically controlled toric transmission with concentric two piston valve and governor means. 3,826,147, Cl. 74-200.000.
Shatterproof Glass Corporation: *See—*
Chambers, Douglas L.; Carmichail, Donald C.; and Wan, Chong T., 3,826,728.
Shaumian, Grigor Arutjunovich. Multispindle automatic machine tool. 3,826,162, Cl. 82-3.000.
Shaw, Keith E. Information storage and retrieval system and apparatus. 3,826,028, Cl. 40-70.000.
Shaw, Robert F.: *See—*
Gage, John M.; Shaw, Robert F.; and Stoft, Paul E., 3,826,263.
Shaw, Woodrow G.: *See—*
Cameron, Frank L.; Carothers, John W.; and Shaw, Woodrow G., 3,827,010.
Shaw-Walker Company, The: *See—*
Anderson, Clarence A. F., 3,826,552.
Hitchcock, Arleigh C., 3,826,453.
Shell Oil Company: *See—*
Karnes, George Thomas, 3,826,310.
Pegels, Abraham A.; and Wijffels, Joannes B., 3,826,737.
Richardson, Edwin A.; and Scheuerman, Robald F., 3,826,312.
Verschuur, Eke, 3,826,279.
Shenkenberg, David R.; Barnes, Faye G.; and Webb, Byron H., to United States of America, Agriculture. Preparation of baked goods having sourdough flavor without using a sourdough starter. 3,826,850, Cl. 426-25.000.
Sheppard, Richard H. Ball-screw mechanism. 3,826,153, Cl. 74-759.000.
Sheppard, Richard H. Dual hydraulic power steering system. 3,826,328, Cl. 180-79.20r.
Sherwin-Williams Company, The: *See—*
Rees, Thomas C., 3,826,670.
Sherwood, Nancy Spicer: *See—*
Szabo, Miklos Tamas; Sharpe, Andrew Jackson, Jr.; and Sherwood, Nancy Spicer, 3,826,311.
Shick, John W.; Davis, Robert H.; and Simpson, Charles A., to Mobil Oil Corporation. Lubricant compositions. 3,826,746, Cl. 252-51.50r.
Shileds, Donald F. Scalpel implement. 3,825,990, Cl. 29-268.000.
Shim, Wook Rang: *See—*
Vax, Naftali; and Shim, Wook Rang, 3,826,869.
Shima, Seiya: *See—*
Hayase, Shunichiro; Shima, Seiya; Ando, Takeki; Kuroha, Hiroaki; and Kurosawa, Toshiaki, 3,826,961.
Shima, Takeo: *See—*
Shimauchi, Shiro; Minemura, Norihiro; Matsui, Takeshi; Ito, Kenji; Shima, Takeo; Kawase, Shoji; and Oshima, Masataka, 3,826,609.
Shimauchi, Shiro; Minemura, Norihiro; Matsui, Takeshi; Ito, Kenji; Shima, Takeo; Kawase, Shoji; and Oshima, Masataka, to Teijin Limited. Method of dyeing synthetic fibers and blends. 3,826,609, Cl. 8-21.00r.
Shimba, Hiroshi: *See—*
Ichiba, Terumichi; Shimba, Hiroshi; and Mukunashi, Hiroaki, 3,826,862.
Shimizu, Toyokazu: *See—*
Hirai, Michihiro; and Shimizu, Toyokazu, 3,826,666.
Shimosato, Shoichi: *See—*
Hara, Toshito; Tanaka, Hiroaki; and Shimosato, Shoichi, 3,826,886.
Shimp, Alan B.: *See—*
Maier, Alfred E.; and Shimp, Alan B., 3,826,951.
Shindo, Masashi, to Pilot Man-men Hitsu Kabushiki Kaisha. Apparatus for sucking up and lifting the uppermost sheet material from a stack of such sheet materials. 3,826,485, Cl. 271-106.000.
Shinohara, Katsuji: *See—*
Nagasaka, Nagahiko; and Shinohara, Katsuji, 3,826,966.
Shinomura, Toshihiko, to Nippon Oil Company. Wax composition for protecting rubbers against attack of ozone. 3,826,735, Cl. 208-21.000.
Shippers Automation, Inc.: *See—*
Stewart, T. Dale; Stewart, Thomas D.; and Hautau, Charles F., 3,826,198.
Stewart, T. Dale; Stewart, Thomas D.; and Hautau, Charles F., 3,826,199.
Stewart, T. Dale; Stewart, Thomas D.; and Hautau, Charles F., 3,826,200.
Stewart, T. Dale; Stewart, Thomas D.; and Hautau, Charles F., 3,826,201.
Shore, Paul B., to Shorewood Packaging Corporation. Phonograph record jacket. 3,826,360, Cl. 206-312.000.
Shorewood Packaging Corporation: *See—*
Shore, Paul B., 3,826,360.
Short, James L., to Ecodyne Corporation. Method of separating cation and anion exchange resins. 3,826,761, Cl. 260-2.10r.
Shotton, Thomas E., Jr. Conveyor-type cooking device. 3,826,184, Cl. 99-404.000.
Showa Kenko Kabushiki Kaisha: *See—*
Kuroyama, Shigefumi; Kaneda, Masaki; and Tamura, Hiroshi, 3,826,015.
Shubert, Roland H.: *See—*
Cohen, Ernest S.; and Shubert, Roland H., 3,826,667.
Shultz, James R.: *See—*
Bucek, Jiri B.; and Shultz, James R., 3,826,928.
Sick, Uwe, to Heberlein & Co. AG. Apparatus for treatment of yarns and web-like material. 3,826,112, Cl. 68-8.000.
Sickinger, Hans, Company: *See—*
Pfaffle, Ernst, 3,826,290.
Siddall, John B.: *See—*
Henrick, Clive A.; and Siddall, John B., 3,826,804.
Siegel, William. Planar work holder. 3,826,483, Cl. 269-203.000.
Siegler, Lear, Inc.: *See—*
Inman, Harold W.; Surletta, Zygmunt M.; and Klicki, Chester E., 3,825,960.
Siemens Aktiengesellschaft: *See—*
Bachmann, Gerhard, 3,826,377.
Bendel, Hermann, 3,826,878.
Graf, Peter, 3,826,556.
Kattner, Erich; and Bork, Klaus, 3,826,192.
Keller, Wolfgang, 3,827,017.
Kindl, Helmut; and Westermeier, Heinz, 3,826,998.
Sihvola, Eero: *See—*
Valkama, Aarne J.; Sihvola, Eero; and Puttonen, Risto V., 3,826,905.
Silverman, Arnold B.: *See—*
Gilbert, Verne E.; and Silverman, Arnold B., 3,826,717.
Simmons, Charles Clair, to Auto Crane Company. Safety reminder system for power machines. 3,827,040, Cl. 340-267.00r.
Simon, Myron S.: *See—*
Ciecuch, Ronald F. W.; and Simon, Myron S., 3,826,801.
Simonin, Jean-Claude; and Badoux, Jean-Daniel, to Fabrique de Machines Andre Bechler S.A. Movement control device for a single or multi-spindle device on an automatic loose-head machine tool. 3,826,161, Cl. 82-2.00b.
Simpson, Charles A.: *See—*
Shick, John W.; Davis, Robert H.; and Simpson, Charles A., 3,826,746.

Simpson, Charles A.; Davis, Robert H.; and Sedlak, Michael, to Mobil Oil Corporation. Nitrite concentration control device for water base metalworking fluids. 3,826,620, Cl. 23-253.0tp.

Sinchuk, Georgy Georgievich; and Smirnov, Gennady Vasilievich. Multi-channel device for optical control of converter bridge rectifiers in D.C. transmission lines. 3,826,916, Cl. 250-208.000.

Singer, Company, The: *See—*
Paufve, Eldred H., 3,826,864.

Sinkovitz, Gloria Dimarco: *See—*
Hoover, Merwin Frederick; Sinkovitz, Gloria Dimarco; and Schaper, Raymond Joseph, 3,826,767.

Sinnott, David J.; and Alecci, Donald E., to Star-New Era, Inc. Multilens photocomposing mechanism. 3,827,063, Cl. 354-15.000.

Sjotun, Kvrre: *See—*
Rognmo, Tore; and Sjotun, Kvrre, 3,826,193.

SKF Compagnie d'Applications Mecaniques: *See—*
De Lavalette, Pierre de Lacroix; Hein, Daniel; Boudet, Georges; Meyer, Jean-Claude; Neron, Alain; Biaunier, Alain; Blaiberg, Alain; Nouveau, Jean Louis; Charpentier, Jacques Georges; and Jacquot, Alain, 3,825,982.

Slater, Shelby D.: *See—*
Chatters, Roy M.; Kimbrell, James E.; and Slater, Shelby D., 3,826,617.

Slayton, Darrell E. Hay baler trailer. 3,826,515, Cl. 280-106.00t.

Smathers, Harry W.: *See—*
Jones, Robert S., Jr.; and Smathers, Harry W., 3,826,230.

Smirnov, Gennady Vasilievich: *See—*
Sinchuk, Georgy Georgievich; and Smirnov, Gennady Vasilievich, 3,826,916.

Smith, Clive W.: *See—*
Tolman, Richard L.; and Smith, Clive W., 3,826,803.

Smith, Donald Tolman; and Spenninger, William Robert, said Smith assor. to Bell Telephone Laboratories, Incorporated and said Spenninger assor. to Western Electric Company, Incorporated. Wire connector presser tool. 3,825,987, Cl. 29-203.00h.

Smith, Glendon: *See—*
Mauch, Hans A.; and Smith, Glendon, 3,827,025.

Smith, Gordon E., to Medidyne Corporation. Catheter delivery device. 3,826,256, Cl. 128-214.400.

Smith, Harold D.; and Chambers, Richard E., to United States of America, Air Force. Module construction system. 3,826,056, Cl. 52-284.000.

Smith International, Inc.: *See—*
Pereau, Robert L., 3,826,317.

Smith, John R.; and Bray, James A., to National Steel Corporation. Lubricated metallic container stocks and method of preparing the same and applying an organic coating thereto. 3,826,675, Cl. 117-75.000.

Smith, Lionel S., Jr.: *See—*
Schlotterer, John C.; and Smith, Lionel S., Jr., 3,827,029.

Smith, Percy L.: *See—*
Comstock, Lowell R.; and Smith, Percy L., 3,826,805.
Comstock, Lowell R.; and Smith, Percy L., 3,826,806.

Smith, Richard R.: *See—*
Wallin, Walter R.; Lowery, Virgil W.; and Smith, Richard R., 3,826,921.

Smithe, F. L., Machine Company, Inc.: *See—*
Bethke, Erwin, 3,826,442.

Smithkline Corporation: *See—*
Sutton, Blaine M.; Walz, Donald T.; and Wilson, James W., 3,826,839.

Smolka, Kurt. Garbage press. 3,826,187, Cl. 100-53.000.

Smolka, Thomas Gordon, to Gertsch AG, mesne. Safety ski binding. 3,826,509, Cl. 280-11.35m.

Smuland, Robert J.; and Ward, Richard K., to General Electric Company. Combustion liner cooling slot stabilizing dimple. 3,826,082, Cl. 60-39.650.

Smythe, William J.; Bellinger, S. Lawrence; Diebler, Herman G.; and Dannewitz, Robert, to Technicon Instruments Corporation. Fluid system for inclusion in a total automated fluid system of a sample analyzer. 3,826,615, Cl. 23-230.00r.

Sobolev, Igor; and Woycheshin, Elias A., to Kaiser Aluminum & Chemical Corporation. . 3,826,775, Cl. 260-42.450.

Societa' Italiana per Azioni per la Produzione di Calci e Cementi di Segni: *See—*
Rio, Arturo; Cerrone, Marcello; and Saini, Alberto, 3,826,680.

Societa' per La Strada Guidata S.r.l.: *See—*
Pevararo, Cesare, 3,826,197.

Societe Anonyme: *See—*
Vialle, Michel; and Turpin, Michel (said Vialle and said Turpin assors. to said), 3,826,681.

Societe Anonyme dite: Aquitaine Total Organico: *See—*
Bruant, Philippe, 3,826,785.

Societe des Mines Montagne et Fonderies de Zinc de la Viella: *See—*
Bodson, Fernand Jacques Joseph, 3,826,648.

Societe Industrielle de Brevets et d'Etudes S.I.B.E.: *See—*
Mennesson, Andre Louis, 3,826,233.

Societe Industrielle Honeywell Bull (Societe Anonyme): *See—*
Prieur, Lucien Robert, 3,827,081.

Societe Wendel-Sidelor: *See—*
Vialle, Michel; and Turpin, Michel, 3,826,681.

Soderberg, Rolf Harald; and Helmer, Clas Erik, to Sandvik Aktiebolag. Nickel-chromium iron alloy. 3,826,649, Cl. 75-124.000.

Soenksen, Uwe: *See—*
Daut, Helmut; Soenksen, Uwe; and Wiersdorff, Walter Wielant, 3,826,727.

Solid State Technology, Inc.: *See—*
Willis, John George, 3,827,038.

Solvay & Cie: *See—*
Demillecamps, Edmond; and Danguy, Ghislain, 3,826,774.

Sonoco Products Company: *See—*
Le Hardy, Clement D., 3,826,445.

Sony Corporation: *See—*
Nakamura, Toshifumi; Ohsoshi, Akio; and Muramoto, Shoico, 3,826,949.
Usui, Setsuo, 3,827,048.
Wakamiya, Kinji, 3,825,997.

Sorge, Arthur L. Golfing accessory. 3,826,502, Cl. 273-183.00b.

Spahrkas, Heinrich: *See—*
Komarek, Ernst; and Spahrkas, Heinrich, 3,826,610.

Spaller, Albert E., Jr.; and Stockbridge, Bruce W., to Eastman Kodak Company. Method for applying pressure in cutting elongated flexible material into predetermined shorter lengths and apparatus for practicing the improved method. 3,826,163, Cl. 83-18.000.

Spear, Richard S., to B-A-L Products Corporation; a division of Nova Products of California. Trailer jack. 3,826,470, Cl. 254-86.00r.

Speed Systems, Inc.: *See—*
Bilbrey, Robert A.; and Maytham, Walter J., 3,826,001.

Spenninger, William Robert: *See—*
Smith, Donald Tolman; and Spenninger, William Robert, 3,825,987.

Spicer, Wilson C.: *See—*
Brandon, Harold J.; and Spicer, Wilson C., 3,826,083.

Spillman, Robert L. Mobile aerial platform. 3,826,334, Cl. 182-2.000.

Spinelli, John; and Koury, Barbara Jean, to United States of America, by the Secretary of Commerce. Preparation of functional fish protein concentrates and isolates. 3,826,848, Cl. 426-7.000.

Spinello, Ronald P. Dental mirror apparatus for holding expendable demisting sleeves. 3,826,005, Cl. 32-69.000.

Spiringer, Arthur James, to Porter, H.K., Company, Inc. Adjustable rail support. 3,826,881, Cl. 191-32.000.

Spooner, Archer Michael: *See—*
Lobb, Daniel Richard; and Spooner, Archer Michael, 3,826,557.

Springfield Wire, Inc.: *See—*
Beauregard, William W., 3,826,463.

Sta-Rite Industries, Inc.: *See—*
Frank, Raymond W.; and Kralovec, William M., 3,826,589.

Staeheli, Paul, to Rieter Machine Works Ltd. Apparatus for forming a silver from a fiber web produced in a card. 3,825,975, Cl. 19-150.000.

Stahl, William F., to Westinghouse Electric Corporation. Process for converting heat produced by a nuclear reactor to electrical energy. 3,826,091, Cl. 60-644.000.

Stambaugh, Frederic P.: *See—*
Shaffer, Ronald L.; and Stambaugh, Frederic P., 3,826,602.

Standard Oil Company: *See—*
Udelhofen, John J.; Watson, Roger W.; and Kurasiewicz, Adam S., 3,826,798.

Stange, Helmut: *See—*
Forster, Karl-Heinz; Vetter, Lothar; and Stange, Helmut, 3,826,487.

Stanley, Robert K., to Textured Yarn Co., Inc. Strand treatment. 3,826,438, Cl. 242-45.000.

Star-New Era, Inc.: *See—*
Sinnott, David J.; and Alecci, Donald E., 3,827,063.

Staskus, Edward J., to Krueger, W. A. Co. Shipping folder. 3,826,362, Cl. 206-424.000.

Statham Instruments, Inc.: *See—*
Funfstuck, Horst, 3,826,245.

Stauffer Chemical Company: *See—*
Legnick, Guenther Fritz, 3,826,782.
Pallos, Ferenc M., 3,826,830.

Steel Company of Canada Limited, The: *See—*
Addinall, Ramon Leonard; Lewis, William Trevor; and Mudroch, Otokar, 3,826,628.

Steelastic Company, The: *See—*
Alderfer, Sterling W., 3,826,297.

Steelcase Inc.: *See—*
Andrus, William C.; and Wienszkowski, Thomas H., 3,826,533.

Steele, Malcolm S.: *See—*
Winston, James F.; Greer, William J.; and Steele, Malcolm S., 3,826,976.

Steffens, Lester R., to Mobil Oil Corporation. Dispensing volatile hydrocarbon fuels. 3,826,291, Cl. 141-59.000.

Stein, William B.: *See—*
Cochran, Burton L.; and Stein, William B., 3,825,981.

Steinhauer, Norman M.: *See—*
McKean, Joseph T.; and Steinhauer, Norman M., 3,826,940.

Steinmann, Helmut, to Bosch, Robert, G.m.b.H. Capacitive detector device. 3,826,979, Cl. 324-61.00r.

Stevens, Duane M. Trailer mover. 3,826,324, Cl. 180-6.500.

Stevens, Jack D. Miniature radio receiver. 3,826,987, Cl. 325-361.000.

Stevens, Keith Drummond: *See—*
Morton, John; Stevens, Keith Drummond; and Thexton, Graham Spencer, 3,826,962.

Stevenson, Clarence H., III. Live storage conveyor system. 3,826,349, Cl. 198-81.000.

Steward, Henry A.: *See—*
Ball, Harry; and Steward, Henry A., 3,826,370.

Stewart, Eugene E., to Goodyear Aerospace Corporation. Laser measuring or monitoring system. 3,826,576, Cl. 356-164.000.

Stewart, T. Dale; Stewart, Thomas D.; and Hautau, Charles F., to Shippers Automation, Inc. Portable railway car mover. 3,826,198, Cl. 105-90.00a.

Stewart, T. Dale; Stewart, Thomas D.; and Hautau, Charles F., to Shippers Automation, Inc. Portable railway car mover. 3,826,199, Cl. 105-90.00a.

Stewart, T. Dale; Stewart, Thomas D.; and Hautau, Charles F., to Shippers Automation, Inc. Portable railway car mover. 3,826,200, Cl. 105-90.00a.

Stewart, T. Dale; Stewart, Thomas D.; and Hautau, Charles F., to Shippers Automation, Inc. Portable railway car mover. 3,826,201, Cl. 105-90.00a.

Stewart, Thomas D.: *See—*
Stewart, T. Dale; Stewart, Thomas D.; and Hautau, Charles F., 3,826,198.
Stewart, T. Dale; Stewart, Thomas D.; and Hautau, Charles F., 3,826,199.
Stewart, T. Dale; Stewart, Thomas D.; and Hautau, Charles F., 3,826,200.
Stewart, T. Dale; Stewart, Thomas D.; and Hautau, Charles F., 3,826,201.

Stinson, Donald B., Jr.: *See—*
Schwartz, Robert B.; Banerjea, Tara N.; and Stinson, Donald B., Jr., 3,826,050.

Stockbridge, Bruce W.: *See—*
Spaller, Albert E., Jr.; and Stockbridge, Bruce W., 3,826,163.

Stoft, Paul E.: *See—*
Gage, John M.; Shaw, Robert F.; and Stoft, Paul E., 3,826,263.

Stolle Corporation, The: *See—*
Hasselbeck, Richard J., 3,826,123.

Stoller, Milton: *See—*
Erlich, Melvin P.; Stoller, Milton; Grand, Stanley; and De Cote, Robert, 3,826,899.

Stolowitz, Michael C.: *See—*
Wilkinson, Bruce L.; and Stolowitz, Michael C., 3,826,967.

Stork Amsterdam N.V.: *See—*
Koster, Wolfgang; and Jentzsch, Harald, 3,826,417.

Stover, David Emmert, to Deere & Company. Vehicle bottom guard structure. 3,826,327, Cl. 180-69.100.

Stowell, Harold Lindsley. Focusing mechanism for underwater camera. 3,827,069, Cl. 354-64.000.

Stratta, James L. Board for prearranged domino hands. 3,826,500, Cl. 273-151.000.

Stromberg-Carlson Corporation: *See—*
Gueldenpfennig, Klaus; Pommerening, Uwe A.; and Russell, Stanley L., 3,826,876.

Strong, Jerry G., to Mobil Oil Corporation. 3-(4-Methyl-3-cyclohexenyl-butyl esters and epoxidized derivatives thereof as insect juvenile hormone minmicking compounds and insecticides. 3,826,840, Cl. 424-305.000.

Strull, Gene: *See—*
White, Marvin H.; and Strull, Gene, 3,826,926.

Stuetz, Dagobert E., to Celanese Corporation. Continuous treatment of a polyacrylonitrile at elevated temperatures on a porous roll. 3,826,611, Cl. 8-115.500.

Stull, Morton. Safety cap. 3,826,394, Cl. 215-9.000.

Sturges, James Robert: *See—*
Oldenburg, Dorrance; and Sturges, James Robert, 3,826,388.

Suekane, Mikio; Kanno, Mutsuo; and Hasegawa, Shiro, to CPC International Inc. Thermophilic glucose isomerase enzyme preparation. 3,826,714, Cl. 195-31.00f.

Sullivan, Arthur J.: *See—*
Root, Glenn M.; Root, Ronald G.; Parenti, Alvin L.; and Sullivan, Arthur J., 3,825,965.

Sullivan, James F., to Kulka Electric Corporation. Screw socket. 3,827,003, Cl. 339-180.000.

Sulzer Brothers Ltd.: *See—*
Muller, Jochen, 3,826,155.

Sumitomo Electric Industries Ltd.: *See—*
Ichiba, Terumichi; Shimba, Hiroshi; and Mukunashi, Hiroaki, 3,826,862.

Sumitomo, Yasusuke: *See—*
Sawazaki, Hajime; Sakai, Kiyohide; Tsutsumi, Hiroshi; Sumitomo, Yasusuke; Niwa, Kazuo; and Inaba, Eisaku, 3,826,699.

Summa, Frank. Educational space game. 3,826,496, Cl. 273-108.000.

Summit Filter Corporation: *See—*
Higgins, Frank, 3,826,066.

Sun Chemical Corporation: *See—*
Helding, Norman A., 3,826,014.

Sun Oil Company of Pennsylvania: *See—*
Rue, Howard M., 3,826,668.

Sunbeam Plastics Corporation: *See—*
Montgomery, Gary Van, 3,826,395.

Suomen Sokeri Osakayhtio (Finnish Sugar): *See—*
Valkama, Aarne J.; Sihvola, Eero; and Puttonen, Risto V., 3,826,905.

Sureau, Alain: *See—*
Jaegle, Pierre; Carillon, Antoine; Dhez, Pierre; Jamelot, Gerard; Sureau, Alain; Cukier, Michel; Dupeyrat, Monique; and Vogel, Claudine, 3,826,996.

Surletta, Zygmunt M.: *See—*
Inman, Harold W.; Surletta, Zygmunt M.; and Klicki, Chester E., 3,825,960.

Surtees, Lyll Stanley: *See—*
Riggs, Olen Lonnie, Jr.; and Surtees, Lyll Stanley, 3,826,724.

Susi, A. Frederick, to GTE Sylvania Incorporated. Switching circuit employing latching type semiconductor devices and associated control transistors. 3,826,873, Cl. 179-18.0gf.

Sutherlan, William B., to Pickering Industries, Inc. Collapsible, adjustable shelving. 3,826,207, Cl. 108-108.000.

Sutton, Blaine M.; Walz, Donald T.; and Wilson, James W., to Smithkline Corporation. Anti-arthritic compositions comprising ester derivatives of pulvinic acid and methods of producing anti-arthritic activity. 3,826,839, Cl. 424-279.000.

Suyama, Tsunesuke; Saeki, Masnori; and Okada, Ryuzo, to Sankyo Company Limited. Ointment base. 3,826,845, Cl. 424-365.000.

Suzuki, Akihisa, to Nippon Gakki Seizo Kabushiki Kaisha. Electronic musical instrument with frequency-deviated pedal tone signal. 3,826,859, Cl. 84-1.170.

Suzuki, Isamu; Nakahara, Yasuji; Ichikawa, Kiyoshi; and Osonoi, Kaoru, to Asahi Kasei Kogyo Kabushiki Kaisha. Process for preparing polyuethane compositions. 3,826,768, Cl. 260-29.2tn.

Svendsen, Lars-Gundro: *See—*
Blomback, Gustav Erik Birger; Blomback, Margareta; Olsson, Per Ingermar; Svendsen, Lars-Gundro; Afekenstam, Bo Thuresson; and Claeson, Karl Goran, 3,826,793.

Sweet, Richard G.: *See—*
Bonner, William A.; Sweet, Richard G.; and Hulett, Henry R., 3,826,364.

Swiss Aluminium Ltd.: *See—*
Abderhalden, Johann Heinrich, 3,826,524.

Sybron Corporation: *See—*
Kocache, Riad M.A.; and Holman, Danny F., 3,826,974.

Syntex (R.S.A.) Inc.: *See—*
O'Rourke, Anne Cecile; and Kent, John Scott, 3,826,823.

Szabo, Miklos Tamas; Sharpe, Andrew Jackson, Jr.; and Sherwood, Nancy Spicer, to Calgon Corporation. Producing well treatment. 3,826,311, Cl. 166-295.000.

Taiheyo Coal Mining Co., Ltd.: *See—*
Fujimori, Masao; and Nakajima, Shigeo, 3,826,535.

Tajima, Yoshio: *See—*
Kubo, Junichi; and Tajima, Yoshio, 3,826,739.

Takagi, Akira; and Kuroki Motoharu, to Fuji Photo Film Co., Ltd. Web edge position controlling device. 3,826,416, Cl. 226-22.000.

Takagi, Momoyoshi: *See—*
Ohya, Shogo; Hara, Katsuyuki; Takagi, Momoyoshi; and Kurokawa, Masao, 3,826,704.

Takamatsu, Ikuno, to Yoshida Kogyo Kabushiki Kaisha. Slide fastener having a filling core. 3,825,977, Cl. 24-205.100.

Takayasu, Kiyosumi. Apparatus for automatically effecting vacuum concentration and recovery of waste liquid. 3,826,718, Cl. 202-181.000.

Takemura, Takehide: *See—*
Oka, Shunzo; Minami, Shunji; and Takemura, Takehide, 3,826,970.

Takeshita, Yasuhiro; Uoi, Michitake; Hirai, Yoshiyuki; and Uchiyamay, Mitsuru, to Idemitsu Kosan Co., Ltd. Thermoplastic plastic composition. 3,826,760, Cl. 260-2.0ep.

Takeuchi, Shigeo, to Takeuchi Tekko Kabushiki Kaisha. Brush control device for vehicle cleaning apparatus. 3,825,967, Cl. 15-21.00d.

Takeuchi Tekko Kabushiki Kaisha: *See—*
Takeuchi, Shigeo, 3,825,967.

Tamura, Hiroshi: *See—*
Kuroyama, Shigefumi; Kaneda, Masaki; and Tamura, Hiroshi, 3,826,015.

Tanaka, Hiroaki: *See—*
Hara, Toshito; Tanaka, Hiroaki; and Shimosato, Shoichi, 3,826,886.

Tanaka, Saburo, to Sendai Television Broadcasting Corporation. Simultaneous radio communication system between two stations. 3,827,052, Cl. 343-178.000.

Tanaka, Shoichi; Kousaka, Susumu; and Kimura, Toshio. Polyvinyl alcohol cord tires. 3,826,298, Cl. 152-359.000.

Tanaka, Yoshitake: *See—*
Horikoshi, Koki; Ikeda, Yonosuke; and Tanaka, Yoshitake, 3,826,715.

Tanikawa, Teruo: *See—*
Kunogi, Mahito; and Tanikawa, Teruo, 3,826,477.

Tanikoshi, Kinzi: *See—*
Yanagisawa, Takeshi; Tanikoshi, Kinzi; and Ono, Yusuke, 3,827,066.

Tauer, Kenneth A. Compact lift for van. 3,826,386, Cl. 214-77.00r.

Tausch, Gilbert H., to Camco, Incorporated. Well safety valve. 3,826,309, Cl. 166-224.00s.

Taylor, Frank H., to Otis Engingeering Corporation. Large bore rotary safety valves for wells. 3,826,462, Cl. 251-58.000.

Taylor, Larry K., to Owens-Illinois, Inc. Removal of warp from corrugated paperboard. 3,826,178, Cl. 93-1.00r.

Technical Fabricators, Inc.: *See—*
Ball, Harry; and Steward, Henry A., 3,826,370.

Technicon Instruments Corporation: *See—*
Smythe, William J.; Bellinger, S. Lawrence; Diebler, Herman G.; and Dannewitz, Robert, 3,826,615.

Teijin Limited: *See—*
Maruyama, Fumishige; Yasui, Toshiyuki; and Asada, Kaoru, 3,826,075.

Shimauchi, Shiro; Minemura, Norihiro; Matsui, Takeshi; Ito, Kenji; Shima, Takeo; Kawase, Shoji; and Oshima, Masataka, 3,826,609.

Teijin Modern Yarn Co., Ltd.: *See*—
Maruyama, Fumishige; Yasui, Toshiyuki; and Asada, Kaoru, 3,826,075.

Teletype Corporation: *See*—
Cook, Harold D., 3,827,041.

Telge, Donald E., to Velsicol Chemical Corporation. Multiple spray head. 3,826,431, Cl. 239-551.000.

Temperley, Julian Harold Vazeille: *See*—
Tuthill, George Robert; Temperley, Julian Harold Vazeille; and Neville, Humphrey, 3,826,069.

Tenneco Chemicals, Inc.: *See*—
Minieri, Pasquale P., 3,826,657.

Tenorio, Carlos A. Composite wall panel for building construction. 3,826,052, Cl. 52-293.000.

Terada, Yoshiaki: *See*—
Masuda, Yoshinori; Sato, Hideo; Kobayashi, Tadahiro; and Terada, Yoshiaki, 3,826,712.

Teramoto, Ryuzo: *See*—
Noma, Tetsuo; Hayakawa, Koji; Nagao, Osamu; Okano, Ichizo; Teramoto, Ryuzo; Kurihara, Tomomichi; Nakano, Kenji; and Okamoto, Tomiyasu, 3,826,399.

Terasawa, Masatoshi: *See*—
Ogawa, Koichi; and Terasawa, Masatoshi, 3,826,847.

Terraillon, Paul. Balance. 3,826,320, Cl. 177-170.000.

Texaco Inc.: *See*—
Jones, Henry B.; and Bunn, Dorrance P., Jr., 3,826,624.
Leonard, John M.; and Lewis, John S., Jr., 3,826,904.

Texas Instruments Incorporated: *See*—
Chu, Ting L., 3,826,700.
Kastner, William D.; and Cobb, Gary W., 3,827,031.
Mize, Jack P., 3,827,073.
Towson, Glendon D.; and Koberlein, James H., 3,827,027.

Textured Yarn Co., Inc.: *See*—
Stanley, Robert K., 3,826,438.

Theissen, Robert J., to Mobil Oil Corporation. Substituted benzoylphosphonates as herbicides. 3,826,640, Cl. 71-86.000.

Thelissen, Will: *See*—
Heuvel, Milike Vanden; and Thelissen, Will, 3,827,004.

Them, Edward G.: *See*—
Kowalski, Walter C.; and Them, Edward G., 3,827,013.

Thenot, Raymond, to Bales Jewelry, Inc. False tooth construction. 3,826,003, Cl. 32-8.000.

Therachemie Chemisch Therapeutische GmbH: *See*—
Wiskott, Erik, 3,826,608.

Therm-O-Disc Incorporated: *See*—
Kowalski, Walter C.; and Them, Edward G., 3,827,013.

Thermo Electron Corporation: *See*—
Noe, William B., 3,826,282.

Thexton, Graham Spencer: *See*—
Morton, John; Stevens, Keith Drummond; and Thexton, Graham Spencer, 3,826,962.

Thiel, Rudolf; and Lauterwasser, Armin, to ITT Industries, Inc. Brake booster. 3,826,175, Cl. 91-369.00b.

Thiokol Chemical Corporation: *See*—
McDonald, Allan J., 3,826,087.

Thomas, Alan; and Heath, Ronald Alfred, to Lucas, Joseph, (Industries) Limited. Fluid pressure transducers. 3,826,143, Cl. 73-398.00c.

Thomas, Albert Richard: *See*—
Bleinberger, Warren Edward; Franke, Edward Louis, Jr.; Galloway, John Vernon; Richardson, George William; Thomas, Albert Richard; and Thomas, Palmer Doyle, 3,826,690.

Thomas, David Ellis, to Sagamo Weston Limited. Electric switching devices. 3,827,009, Cl. 337-77.000.

Thomas, James Larue; and Beacham, Harry Hoyt, to FMC Corporation. Flame retardant diallylic phthalate molding compounds. 3,826,777, Cl. 260-42.180.

Thomas, Michael W.; and Boaz, Virgil L., to Westinghouse Electric Corporation. Power transformer having flux shields surrounding metallic structural members. 3,827,018, Cl. 336-84.000.

Thomas, Palmer Doyle: *See*—
Bleinberger, Warren Edward; Franke, Edward Louis, Jr.; Galloway, John Vernon; Richardson, George William; Thomas, Albert Richard; and Thomas, Palmer Doyle, 3,826,690.

Thomason, Thomas. Magnetic spinner. 3,826,497, Cl. 273-109.000.

Thompson, Alan: *See*—
Hutton, Henry James; and Thompson, Alan, 3,826,600.

Thompson, David M., to Xerox Corporation. Dry film developing apparatus. 3,826,896, Cl. 219-388.000.

Thomson-CSF: *See*—
De Thieulloy, Bernard; and Claverie, Claude, 3,827,074.
Le Gales, Maurice, 3,826,953.

Timberlake, Robert K., to United States of America, Navy. Torpedo antiself homing (ASH) system. 3,826,210, Cl. 114-24.000.

Timmler, Helmut; Buchel, Karl-Heinz; and Plempel, Manfred, to Farbenfabriken Bayer Aktiengesellschaft. 9-Azolyl-(1)-fluorene-9-carboxylic acid derivatives as an anti-mycotic agent. 3,826,837, Cl. 424-273.000.

Tims, Allan C.: *See*—
Henriquez, Theodore A.; and Tims, Allan C., 3,827,023.

Tobacco Research and Development Institute Limited: *See*—
Venter, Peter Jacobus; and Malan, Johannes Daniel, 3,826,849.

Tobias, Michael J.: *See*—
Merkin, Bill C.; Tobias, Michael J.; Ray, Richard C.; and LaBarge, Robert L., 3,826,048.

Tok-Gyem Finommechanikai es: *See*—
Mandzsu, Jozsef; Jagicza, Laszlo; Peter, Attila; Kellner, Laszlo; and Jodal, Sandor, 3,827,042.

Tokumitsu, Iwao: *See*—
Yamamoto, Hiroshi; Koike, Kengo; Ohgushi, Koji; and Tokumitsu, Iwao, 3,826,841.

Tokyo Shibaura Electric Co., Ltd.: *See*—
Sawazaki, Hajime; Sakai, Kiyohide; Tsutsumi, Hiroshi; Sumitomo, Yasusuke; Niwa, Kazuo; and Inaba, Eisaku, 3,826,699.

Tolliver, Wilbur E., to New York Wire Mills Corporation. Concrete pipe reinforcing cage. 3,826,287, Cl. 138-175.000.

Tolman, Richard L.; and Smith, Clive W., to ICN Pharmaceuticals, Inc. Arabinofuranosyl-8-azaadenines. 3,826,803, Cl. 260-211.50r.

Tomari, Seiji: *See*—
Nagashima, Shinichiro; Tsuchiya, Kaichi; Sakamoto, Yoshihiro; Yamakami, Hiroshi; and Tomari, Seiji, 3,826,747.

Tomasulo, Walter M., Jr.: *See*—
Allen, William J.; and Tomasulo, Walter M., Jr., 3,826,885.

Tone, John W. Variable speed hydrostatic drive. 3,826,097, Cl. 60-719.000.

Toney, Philip A.; and Bowers, John O., Jr., to General Dynamics Corporation. Analog to digital converter. 3,827,044, Cl. 340-347.0ad.

Topolski, Alvin S.: *See*—
Giori, Francis A.; and Topolski, Alvin S., 3,826,265.

Torngren, Frank Axel. Apparatus for trapping certain crustaceans and the like. 3,826,032, Cl. 43-100.000.

Torrington Company, The: *See*—
Woodilla, John E., Jr.; Hunt, Gordon W.; and Green, Willard B., Jr., 3,826,694.

Tourangeau, Donald R. Portable ski workbench. 3,826,482, Cl. 269-88.000.

Towson, Glendon D.; and Koberlein, James H., to Texas Instruments Incorporated. Method and apparatus for producing variable formats from a digital memory. 3,827,027, Cl. 340-172.500.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Arai, Hiroshi; and Ota, Jun, 3,826,541.

Trachtenberg, Isaac: *See*—
Jasinski, Raymond J.; and Trachtenberg, Isaac, 3,826,971.

Trans Technology Corporation, mesne: *See*—
Huber, John Richard, 3,826,473.

Trans-Sonics, Inc.: *See*—
Rigney, Edward T.; Benson, Richard A.; and Edgerton, Bradford W., 3,826,321.

Tranter, Arthur; and Olson, John Dillwyn, to Vono Limited. Rocking chairs. 3,826,456, Cl. 248-375.000.

Treadwell, Kenneth, to M & T Chemicals Inc. Non-burning polyurethane foamed containing a non-prous filler, a halgen source, and a phosphorous-containg compound. 3,826,762, Cl. 260-2.5aj.

Treece, William D.: *See*—
Linko, Peter J.; and Treece, William D., 3,825,984.

Triffit, James Christopher Herbert: *See*—
Sharpe, Raymond; and Triffit, James Christopher Herbert, 3,826,147.

Trimble, Robert M.; and Brouwer, Nicolaas L., to Aluminum Company of America. System for detecting openings in opaque objects. 3,826,923, Cl. 250-572.000.

Triolo, Rocco P.: *See*—
Lamplugh, Roland J.; and Triolo, Rocco P., 3,826,763.

Troeger, Henry, to Bendix Corporation, The. Method of making an eccentric flexural pivot. 3,825,992, Cl. 29-436.000.

Truth Incorporated: *See*—
Armstrong, Henry P., 3,826,044.

TRW Inc.: *See*—
Glorioso, Paul A., 3,826,893.
O'Rourke, John C., 3,826,936.
Zehren, James N., 3,826,525.

Tschopp, Paul: *See*—
Froehlich, Alfred; Tschopp, Paul; and Beuschel, Werner, 3,826,788.

Tsilibes, George N.: *See*—
Draugelis, Vaidevutis C.; Tsilibes, George N.; and Vineski, John E., 3,826,892.

Tsuchiya, Kaichi: *See*—
Nagashima, Shinichiro; Tsuchiya, Kaichi; Sakamoto, Yoshihiro; Yamakami, Hiroshi; and Tomari, Seiji, 3,826,747.

Tsukagoshi, Tsunehiro, to Pioneer Electronic Corporation. Tape cartridge. 3,826,440, Cl. 242-55.19a.

Tsukiura, Hiroshi: *See*—
Kawaguchi, Hiroshi; Fujisawa, Kei-Ichi; Tsukiura, Hiroshi; and Konishi, Masataka, 3,826,802.

Tsutsumi, Hiroshi: *See*—
Sawazaki, Hajime; Sakai, Kiyohide; Tsutsumi, Hiroshi; Sumitomo, Yasusuke; Niwa, Kazuo; and Inaba, Eisaku, 3,826,699.

Tuckey, Charles H., to Walbro Corporation. Air intake silencer for internal combustion engines. 3,826,332, Cl. 181-35.00a.

Tuetey, Paul, to Les Fabriques d'Assortiments Reunies. Anchor escapement for time-measuring instruments. 3,826,076, Cl. 58-116.00r.

Tully, Geoffrey R., Jr.: *See*—
Elson, Robert E.; Heminger, Raymond D.; and Tully, Geoffrey R., Jr., 3,826,753.

Turbett, Robert J., to Union Carbide Corporation. Primary insulation for waterproofed cable. 3,826,781, Cl. 260-45.85s.
Turpin, Gerald Leslie. Cameras. 3,827,071, Cl. 354-126.000.
Turpin, Michel: *See—*
Vialle, Michel; and Turpin, Michel, 3,826,681.
Tuthill, George Robert; Temperley, Julian Harold Vazeille; and Neville, Humphrey. Apparatus for collecting crops. 3,826,069, Cl. 56-328.00r.
Tuttle, James W.: *See—*
Bhatt, Harshad J.; and Tuttle, James W., 3,826,626.
Tvedt, Jan Otto: *See—*
Plough, Charles T.; Tvedt, Jan Otto; Arts, Marcus; Eastwood, H. Keith; and Woo, Frank, 3,826,924.
Twarog, John J., Jr., to Avco Corporation. Brush assembly for a slip ring. 3,826,942, Cl. 310-232.000.
Tyco Laboratories, Inc.: *See—*
Bailey, John S., 3,826,625.
Tyler, W. S. Incorporated: *See—*
Hubach, Louis E., 3,826,367.
U-S Safety Trolley Corporation: *See—*
Ross, Donald R., Sr., 3,826,880.
Uchiyamay, Mitsuru: *See—*
Takeshita, Yasuhiro; Uoi, Michitake; Hirai, Yoshiyuki; and Uchiyamay, Mitsuru, 3,826,760.
Udelhofen, John J.; Watson, Roger W.; and Kurasiewicz, Adam S., to Standard Oil Company. Phosphosulfurized hydrocarbon polymer stabilized with '5-bias(alkyldithio)-1,3,4-thiadiazole. 3,826,798, Cl. 260-139.000.
Ueki, Atsufumi: *See—*
Matsushita, Shigeo; Ueki, Atsufumi; and Furukawa, Motoaki, 3,827,000.
Uffner, William E., to Owens-Corning Fiberglas Corporation. Glass fiber reinforced elastomers. 3,826,074, Cl. 57-140.00g.
Ulk, Alexander: *See—*
Karl, Walter; Rooney, Peter John; and Ulk, Alexander, 3,826,861.
Um, Taesung: *See—*
Orlankini, Bruno; Um, Taesung; and Larson, Andrew H., 3,826,819.
Umlauf, Gunther: *See—*
Pieper, Helmut; and Umlauf, Gunther, 3,826,858.
Union carbide Canada Limited: *See—*
Hakka, Leo Ernest, 3,826,811.
Union Carbide Corporation: *See—*
Comstock, Lowell R.; and Smith, Percy L., 3,826,805.
Comstock, Lowell R.; and Smith, Percy L., 3,826,806.
Turbett, Robert J., 3,826,781.
United Aircraft Corporation: *See—*
Branstrom, Bruce R.; and Huber, Frank W., 3,826,084.
United Kingdom Atomic Energy Authority: *See—*
Grimes, John Herbert; Scott, Kenneth Thomas Bartlett; and McKenna, Norman James, 3,826,755.
United States of America
Agriculture: *See—*
Erickson, John R.; and Hillstrom, William A., 3,826,433.
Horowitz, Robert M.; and Gentili, Bruno, 3,826,856.
Shenkenberg, David R.; Barnes, Faye G.; and Webb, Byron H., 3,826,850.
Air Force: *See—*
Herskind, Richard E., 3,827,054.
Rasberry, Phillip P.; and Whitaker, Donald R., 3,826,558.
Ross, Gerald D.; and Cromwell, Douglas E., 3,826,520.
Smith, Harold D.; and Chambers, Richard E., 3,826,056.
Army: *See—*
Andreotti, Raymond E., 3,826,373.
F'Geppert, Erwin, 3,826,151.
Perham, Roscoe E., 3,826,280.
Army, The: *See—*
Miller, Donald, 3,826,701.
Atomic Energy Commission: *See—*
Chatters, Roy M.; Kimbrell, James E.; and Slater, Shelby D., 3,826,617.
Elson, Robert E.; Heminger, Raymond D.; and Tully, Geoffrey R., Jr., 3,826,753.
Gregg, David W., 3,826,561.
Hoffman, Allan S.; and Schmer, Gottfried, 3,826,678.
Wallin, Walter R.; Lowery, Virgil W.; and Smith, Richard R., 3,826,921.
by the Secretary of Commerce: *See—*
Spinelli, John; and Koury, Barbara Jean, 3,826,848.
Commerce: *See—*
Geller, Sidney B., 3,826,975.
Department of Health Education and Welfare: *See—*
Salcman, Michael; and Bak, Martin J., 3,826,244.
Interior: *See—*
Cohen, Ernest S.; and Shubert, Roland H., 3,826,667.
Mc Vey, James R.; and Meyer, Thomas O., 3,826,128.
Nichols, Ivan L.; and Dannenberg, Raymond O., 3,826,808.
Interior, mesne: *See—*
Jasinski, Raymond J.; and Trachtenberg, Isaac, 3,826,971.
National Aeronautics and Space Administration: *See—*
Burk, Sanger M., Jr., 3,826,448.
Byers, David C.; and Banks, Bruce A., 3,826,729.
Byrne, Frank, 3,826,964.
Philipp, Warren H.; Marsik, Stanley J.; and May, Charles E., 3,826,726.
Navy: *See—*
Anderson, Hugh G.; Rajan, Jai R. N.; and Morse, Wade H., 3,826,544.
Bohli, William H., 3,826,580.
Booth, Newell O., 3,827,022.
Chao, Gene, 3,827,002.
Clark, Edward C., 3,826,281.
Dyjak, Richard C., 3,826,215.
Glazer, Burton G.; and Bittner, Michael A., 3,827,050.
Grantham, Rodney E., 3,826,451.
Henriquez, Theodore A.; and Tims, Allan C., 3,827,023.
Little, William A., 3,826,452.
Moore, Daniel M., 3,825,980.
Nelson, Bud D.; and Brennan, William M., 3,826,449.
Parikh, Gokaldas C., 3,826,613.
Rabinowitz, Azriel J.; and Cama, John J., 3,826,194.
Sawson, Thomas J., 3,826,172.
Timberlake, Robert K., 3,826,210.
Walter, John F., Jr., 3,826,575.
Veterans Administration mesne: *See—*
Mauch, Hans A.; and Smith, Glendon, 3,827,025.
United States Steel Corporation: *See—*
Dukelow, Donald A.; Hunter, Phillip B.; and King, Robert J., 3,826,647.
Koss, George S.; and Scott, Jay R., 3,826,415.
United Wiring and Manufacturing Co., Inc.: *See—*
Rubey, Ulyss Ray, 3,825,999.
Universal Oil Products Company: *See—*
Boyd, David M.; and Wood, Charles E., 3,826,719.
Fournier, Paul w., 3,826,375.
Withers, James G., Jr.; Dean, Harvey R.; and Ross, Stuart T., 3,826,304.
Universal Tag Company Limited: *See—*
Read, Arthur, 3,826,030.
University of Kentucky Research Foundation, The, mesne: *See—*
Knapp, Charles F.; and Eades, George S., 3,826,019.
Unthank, Alexander: *See—*
Dummerfield, Francis; and Unthank, Alexander, 3,826,461.
Uoi, Michitake: *See—*
Takeshita, Yasuhiro; Uoi, Michitake; Hirai, Yoshiyuki; and Uchiyamay, Mitsuru, 3,826,760.
Upjohn Company: *See—*
Killinger, Fred M., 3,826,260.
Killinger, Fred M., 3,826,261.
Upjohn Company, The: *See—*
Moon, Malcolm W., 3,826,844.
Urbansky, Donald I.: *See—*
Larsh, Ray E.; and Urbansky, Donald I., 3,826,253.
Ursel, Eckhard; and Seibicke, Horst, to Bosch, Robert, G.m.b.H. Wiper for wiping adjacent surfaces. 3,825,971, Cl. 15-250.270.
Usui, Setsuo, to Sony Corporation. Alpha-numeric character display device and method, whose characters are formed of light emitting diodes. 3,827,048, Cl. 340-366.00r.
Utilux Pty. Limited: *See—*
Karl, Walter, 3,825,986.
Karl, Walter; Rooney, Peter John; and Ulk, Alexander, 3,826,861.
V.A.C. Industries, Inc.: *See—*
Baugirdas, Kristupas; and Reddy, Redreddy Sukumar, 3,826,042.
Vadas, Leslie, to Castle & Cooke, Inc., mesne. Pineapple recording, segmenting and chunking. 3,826,185, Cl. 99-548.000.
Vahl, Laszlo. Method and apparatus for controlling freezing apparatus. 3,826,100, Cl. 62-63.000.
Valadez, Rudolph. Handcuff holster. 3,826,414, Cl. 224-2.00f.
Valassis, George F., & Company: *See—*
Dickinson, Robert H., 3,826,422.
Valkama, Aarne J.; Sihvola, Eero; and Puttonen, Risto V., to Suomen Sokeri Osakayhtio (Finnish Sugar). Methods and apparatus for providing automatic control of chromatographic fractionating process. 3,826,905, Cl. 235-151.120.
Van Avermaete, Gilbert Lucien. Valve for external combustion motor. 3,826,081, Cl. 60-39.630.
Van Der Koogh, Gerbrand; and Bernards, Antonius P., to Reactor Centrum Nederland. Radiation-measuring instrument with surfaces shielded against contamination. 3,826,918, Cl. 250-343.000.
van der Lely, Ary; and Bom, Cornelis Johannes Gerardus. Cultivating implements. 3,826,314, Cl. 172-59.000.
van der Veen, Romke: *See—*
De Konig, Jan; and van der Veen, Romke, 3,826,023.
van der Ven, Servaas. Solution polymerization process. 3,826,790, Cl. 260-94.20m.
Van Dorn Company: *See—*
Rowe, Edgar R.; and Fox, William R., 3,826,404.
Van Hijfte, Herman Michel: *See—*
Van Staaden, Cornelis Augustinus; Bodmer, Maximiliaan Hubert; Van Hijfte, Herman Michel; and Gellekink, Bernard, 3,827,049.
Van Staaden, Cornelis Augustinus; Bodmer, Maximiliaan Hubert; Van Hijfte, Herman Michel; and Gellekink, Bernard, to N.V. Hollandse Signaalapparaten. Radar system for tracking targets flying at low altitude. 3,827,049, Cl. 343-7.300.
Van Zon, Jacob; and Lake, Russel J., to Rexnord Inc. Spiral column for endless chain conveyor. 3,826,352, Cl. 198-136.000.
Vanausdal, George Duane: *See—*
Orton, Hal L.; Vanausdal, George Duane; and Rowley, Robert A., 3,826,471.
Vandegaer, Jan E.: *See—*

Kiss, Kornell D.; and Vandegaer, Jan E., 3,826,780.

Vano, Gerald Lawrence, to Alden Research Foundation. Graphic electric recorder scanning device with printed recording strips. 3,827,056, Cl. 346-74.00e.

Varian Associates: *See*—
Polese, James P.; and McNees, Sterling G., 3,826,948.

Varrasso, Eugene C., to Owens-Corning Fiberglas Corporation. Method and apparatus for control of conditions in a process. 3,826,903, Cl. 235-151.100.

Vax, Naftali; and Shim, Wook Rang, to Lynch Communication Systems, Inc. Clock synchronization circuit. 3,826,869, Cl. 178-69.50r.

VEB Polygraph Leipzig: *See*—
Forster, Karl-Heinz; Vetter, Lothar; and Stange, Helmut, 3,826,487.

Veit, Herrmann: *See*—
Deichelmann, Hermann; and Veit, Herrmann, 3,826,980.

Velo-Bind, Inc.: *See*—
Abildgaard, William H.; and Groswith, Charles T., III, 3,825,963.
Groswith, Charles T., III; and Buan, Danilo P., 3,825,964.
Groswith, Charles T., III; and Buan, Danilo P., 3,826,168.

Velsicol Chemical Corporation: *See*—
Telge, Donald E., 3,826,431.

Venter, Peter Jacobus; and Malan, Johannes Daniel, to Tobacco Research and Development Institute Limited. Preparation of wine. 3,826,849, Cl. 426-15.000.

Verco Industries: *See*—
Mellor, Eli K., 3,826,254.

Vergobbi, Robert W., to Pneumatic Scale Corporation. Apparatus for applying carrying grids to bottles. 3,826,060, Cl. 53-48.000.

Verschuur, Eke, to Shell Oil Company. Oil/water pipeline inlet with means for producing a uniform oil velocity. 3,826,279, Cl. 137-604.000.

Vetter, Lothar: *See*—
Forster, Karl-Heinz; Vetter, Lothar; and Stange, Helmut, 3,826,487.

Vialle, Michel; and Turpin, Michel, to Societe Wendel-Sidelor and said Vialle and said Turpin assors. to said Societe Anonyme. Method for protecting a hot rolled ferrour product. 3,826,681, Cl. 117-135.100.

Vineski, John E.: *See*—
Draugelis, Vaidevutis C.; Tsilibes, George N.; and Vineski, John E., 3,826,892.

Visser, Johan W.,: *See*—
Visser, Robertus Gerardus, 3,826,968.

Visser, Robertus Gerardus, to Visser, Johan W., and Amstelveen, Frans Verlinden. Arrangement for supervising an electric circuit. 3,826,968, Cl. 322-99.000.

Viswanathan, G.R., to Honeywell Information Systems, Inc. Encoding technique for enabling a device to process different types of digital information transmitted along a single information channel. 3,827,026, Cl. 340-167.00a.

Vockenhuber, Karl: *See*—
Bockenhuber, Karl; Freudenschuss, Otto; and von Belvard, Peter Revy, 3,826,567.

Vogel, Claudine: *See*—
Jaegle, Pierre; Carillon, Antoine; Dhez, Pierre; Jamelot, Gerard; Sureau, Alain; Cukier, Michel; Dupeyrat, Monique; and Vogel, Claudine, 3,826,996.

Volkers, Daphne J.: *See*—
Willie, Edward N.; and Volkers, Walter K., deceased, 3,827,053.

Volkers, Walter K., deceased: *See*—
Willie, Edward N.; and Volkers, Walter K., deceased, 3,827,053.

Von Beckh, Harald J. Pelvis and legs elevating G-protective seat. 3,826,434, Cl. 244-122.00r.

von Belvard, Peter Revy: *See*—
Bockenhuber, Karl; Freudenschuss, Otto; and von Belvard, Peter Revy, 3,826,567.

Von Casimir. Pulsefree peristaltic pump and method of operating same. 3,826,593, Cl. 417-53.000.

Von Kamp, Harold E.: *See*—
Antlfinger, George J.; and Von Kamp, Harold E., 3,826,669.

Vono Limited: *See*—
Tranter, Arthur; and Olson, John Dillwyn, 3,826,456.

Vyzkumny a vyvojovy ustav Zavodu vseobecneho strojirenstvi: *See*—
Milfait, Zdenek, 3,826,907.

Wacker-Chemie GmbH: *See*—
Leicher, Wolfgang; and More, Anton, 3,826,695.

Wada, Yashuiro, to Kabushikikaisha COPAL. Warning circuit of an electric shutter. 3,827,065, Cl. 354-51.000.

Waggonfabrik Verdingen AG: *See*—
Brand, Werner; and Haarkotter, Hermann, 3,826,507.

Wahlberg, Eric C. Apparatus for transacting business. 3,826,344, Cl. 194-2.000.

Wahle, Paul, KG: *See*—
Hillmann, Willi, 3,827,006.

Wainwright, Richard A.; and Wainwright, Stephen A. Skiing game. 3,826,494, Cl. 273-1.00r.

Wainwright, Stephen A.: *See*—
Wainwright, Richard A.; and Wainwright, Stephen A., 3,826,494.

Waite, Langford Horace. Method and apparatus for cutting worm wheels. 3,826,173, Cl. 90-4.000.

Wakamiya, Kinji, to Sony Corporation. Method for making semiconductor device. 3,825,997, Cl. 29-578.000.

Walbro Corporation: *See*—
Tuckey, Charles H., 3,826,332.

Wallace, B. E., Products Corporation: *See*—
Wallace, Bernard E., 3,826,196.

Wallace, Bernard E., to Wallace, B. E., Products Corporation. Load-handling gantries. 3,826,196, Cl. 104-126.000.

Wallace, Paul F.: *See*—
McGinnis, Michael K.; and Wallace, Paul F., 3,825,993.

Wallin, Walter R.; Lowery, Virgil W.; and Smith, Richard R., to United States of America, Atomic Energy Commission. Monitor for radiation-induced heating. 3,826,921, Cl. 250-390.000.

Walmet, Gunnar E.: *See*—
Mc Laughlin, Michael H.; Walmet, Gunnar E.; and Corman, James C., 3,826,957.

Walter, John F., Jr., to United States of America, Navy. High performance ring laser gyroscope with magneto optical bias. 3,826,575, Cl. 356-106.01r.

Walters, Theodore M., to Brown, Charles H. Liquid filter system having automatic filter back wash control and method of operation. 3,826,368, Cl. 210-82.000.

Walworth, Bryant Leonidas: *See*—
Diehl, Robert Eugene; and Walworth, Bryant Leonidas, 3,826,643.

Walz, Donald T.: *See*—
Sutton, Blaine M.; Walz, Donald T.; and Wilson, James W., 3,826,839.

Wan, Chong T.: *See*—
Chambers, Douglas L.; Carmichail, Donald C.; and Wan, Chong T., 3,826,728.

Wang, Maw Shiu. Burner for atomic absorption spectrscopy. 3,826,432, Cl. 239-556.000.

Wang, Wen-Chung. Ultrasonic convolver having piezoelectric and semiconductor properties. 3,826,932, Cl. 310-8.100.

Ward, Richard K.: *See*—
Smuland, Robert J.; and Ward, Richard K., 3,826,082.

Waring, David Richard, to Imperial Chemical Industries Limited. Copper containing azo triazine compounds. 3,826,799, Cl. 260-146.00t.

Warner & Swasey Company, The: *See*—
Cochran, Burton L.; and Stein, William B., 3,825,981.

Warner-Lambert Company: *See*—
Zinnes, Harold; and Lindo, Neil A., 3,826,791.

Warren Fred E., Jr.; Fling, Kenneth F.; and Moore, Gary R., to Ecolo-Tech, Inc. Demolition mill. 3,826,437, Cl. 241-186.00r.

Warren, Horace G.: *See*—
Borel, Robert J.; Foote, James C., Jr.; and Warren, Horace G., 3,826,655.

Warren, Wayne E. Adjustable form support bracket. 3,826,459, Cl. 248-287.000.

Warren, William Edward, to Bespak Industries Limited. Device for dispensing fluids. 3,826,413, Cl. 222-402.130.

Washburn, Douglas J.: *See*—
Kasakowski, Henry R.; and Washburn, Douglas J., 3,827,047.

Watanabe, Hideo; and Leonard, John E., to International Biophysics Corporation. Dispolable electrochemical electrode. 3,826,730, Cl. 204-195.00p.

Watase, Yasuo: *See*—
Ohta, Sadao; and Watase, Yasuo, 3,826,689.

Watkins, Lew: *See*—
Bradel, John H., Jr.; and Watkins, Lew, 3,826,108.

Watkins, Louis W., Jr., to Data Packaging Corporation. Tape cassette. 3,826,489, Cl. 360-132.000.

Watson, Clyde W. Rack for attachment to the top of a vehicle. 3,826,390, Cl. 214-450.000.

Watson, George A., to Rockwell International Corporation. Filtered duty cycle feedback analog to digital converter. 3,827,046, Cl. 340-347.0ad.

Watson, Roger W.: *See*—
Udelhofen, John J.; Watson, Roger W.; and Kurasiewicz, Adam S., 3,826,798.

Wayne Manufacturing Company: *See*—
Larsen, Gregory J., 3,825,968.

Weathers, Luther V.; Nordling, Karl I.; and Ruffner, Ronald C., to Paradyne Corporation. Data telecommunications analyzer. 3,826,908, Cl. 235-153.00r.

Webb, Byron H.: *See*—
Shenkenberg, David R.; Barnes, Faye G.; and Webb, Byron H., 3,826,850.

Weber, Charles A., to Bock Products, Inc. Fifth wheel mounting structure. 3,826,516, Cl. 280-407.000.

Weber, Charles H.; and Pickard, John E., to Grace, W. R., & Co. Laminated aluminum article and method. 3,826,651, Cl. 96-35.100.

Weber, Wilhelm G. Foamed fire resistant self extinguishing compositions containing a flame extinguishing material releasing flame extinguishing gases such as CO_2 or N_2 when subjected to high temperatures and method of making. 3,826,764, Cl. 260–2.5aj.

Wehl, Glenn E., to Portage Electric Products, Inc. Thermal protector. 3,827,014, Cl. 337-407.000.

Wehr, Kenneth E.: *See*—
Purcell, Robert J.; and Wehr, Kenneth E., 3,826,325.

Weil, Burt: *See*—
East, Donald, 3,826,528.

Weinstein, Berel; and Scott, Jimmie D., to Bio-Medical Sciences Incorporated. Thermometer package. 3,826,142, Cl. 73-356.000.

Weiss, George Raymond; and Helling, John Oliver, to Eastman Kodak Company. Developer for surface- and internal-image silver halide photographic materials. 3,826,654, Cl. 96-66.0hd.

Weiss, Maurice A., to Follansbee Steel Corporation. Metal pallet. 3,826,205, Cl. 108-51.000.

Welter, Jeff R., to Hanna, Daniel C. Friction washes. 3,825,969, Cl. 15-97.00r.

Wenzel, Ronald Arthur, to Hilsinger Corporation, The. Spectacle front hinge pinning system. 3,826,565, Cl. 351-121.000.

Wepsala, George B., Jr. Latch bolt protector. 3,826,526, Cl. 292-346.000.

Werling, Francis D., Sr. Eye glass frame for replaceable lenses. 3,826,564, Cl. 351-45.000.

Werner, Walter Myers: *See—*
DeSio, Frederick Carl; and Werner, Walter Myers, 3,826,860.

Wessels, Glenn R., to Dow Chemical Company, The. Apparatus for sample liquids. 3,826,144, Cl. 73-425.40.

Wessling, Bernard W.: *See—*
Epstein, Sheldon L.; and Wessling, Bernard W., 3,826,686.

West Laboratories, Inc.: *See—*
Cantor, Abraham; and Winicov, Murray W., 3,826,826.

Westermeier, Heinz: *See—*
Kindl, Helmut; and Westermeier, Heinz, 3,826,998.

Western Electric Company, Incorporated: *See—*
Bleinberger, Warren Edward; Franke, Edward Louis, Jr.; Galloway, John Vernon; Richardson, George William; Thomas, Albert Richard; and Thomas, Palmer Doyle, 3,826,690.
Smith, Donald Tolman; and Spenninger, William Robert (said Spenninger assor. to), 3,825,987.

Westinghouse Electric Corporation: *See—*
Braunstein, Harry R., 3,827,011.
Cameron, Frank L.; Carothers, John W.; and Shaw, Woodrow G., 3,827,010.
Carlson, Norman R.; Burtnyk, Victor; and Zitelli, William E., 3,826,906.
Conrad, Joseph D., Jr.; Gangloff, Wilmer C., Jr.; and Luongo, Michael C., 3,826,094.
Conrad, Joseph D., Jr.; and Gangloff, Wilmer C., Jr., 3,826,095.
Cooper, Kenneth, 3,826,944.
De Corso, Serafino M.; Hussey, Charles E., Jr.; and Ambrose, Michael J., 3,826,080.
Hruda, Robert M.; and De Haven, Howard E., 3,826,950.
Maier, Alfred E.; and Shimp, Alan B., 3,826,951.
McClelland, Theodore M., III, 3,826,982.
Perry, Robert H., 3,826,930.
Schlotterer, John C.; and Smith, Lionel S., Jr., 3,827,029.
Stahl, William F., 3,826,091.
Thomas, Michael W.; and Boaz, Virgil L., 3,827,018.
White, Marvin H.; and Strull, Gene, 3,826,926.
Yaroshuk, Nicholas; and Burack, Robert D., 3,826,919.

Westmoreland, David H.: *See—*
Mye, James O.; Salabarria, Miguel A.; and Westmoreland, David H., 3,826,064.

Wetoma Corporation: *See—*
Campbell, James W., 3,826,164.

Wheeldex Manufacturing Company, Inc.: *See—*
Scholfield, Richard P., 3,826,549.

Whirlpool Corporation: *See—*
Grierson, Keith J.; and Samuelson, Bruce E., 3,826,935.

Whitaker, Donald R.: *See—*
Rasberry, Phillip P.; and Whitaker, Donald R., 3,826,558.

White, Marvin H.; and Strull, Gene, to Westinghouse Electric Corporation. Charge coupled device area imaging array. 3,826,926, Cl. 307-221.000.

White, Roby Byron, to Braxton Corporation. Method for rapidly exciting and sustaining oscillations in a resonant system. 3,826,993, Cl. 331-1.000.

Whiting, John V.: *See—*
Brown, Gene T.; and Whiting, John V., 3,826,986.

Whitman, Franklin A. Organic fertilizers and their production. 3,826,638, Cl. 71-21.000.

Whittaker, Stanley James; Astill, Cyril J.; and Janzen, Peter, to Atomic Energy of Canada Limited. Valve assembly. 3,826,465, Cl. 251-335.00b.

Wiebe, Harold Dean: *See—*
Wise, Robert G.; and Wiebe, Harold Dean, 3,826,988.

Wienszkowski, Thomas H.: *See—*
Andrus, William C.; and Wienszkowski, Thomas H., 3,826,533.

Wiersdorff, Walter Wielant: *See—*
Daut, Helmut; Soenksen, Uwe; and Wiersdorff, Walter Wielant, 3,826,727.

Wijffels, Joannes B.: *See—*
Pegels, Abraham A.; and Wijffels, Joannes B., 3,826,737.

Wilcox, David L.: *See—*
Gardner, Richard A.; and Wilcox, David L., 3,826,813.

Wild Rover Corporation: *See—*
Allen, William J.; and Tomasulo, Walter M., Jr., 3,826,885.

Wilder, Harry D.; and Kinsley, Homan B., Jr., to Ethyl Corporation. Filter. 3,826,067, Cl. 55-524.000.

Wildwood Products, Inc.: *See—*
Sattler, James L.; and Phillips, David P., 3,826,271.

Wiley, Daryl D., to Motorola, Inc. Self-powered tachometer circuit. 3,826,985, Cl. 324-173.000.

Wiley, Emmett H.: *See—*
Downing, Robert D.; and Wiley, Emmett H., 3,826,913.

Wiley, Robert F. Extrusion die. 3,826,603, Cl. 425-461.000.

Wilhelmsen, Paul C. Glued replacement unit for repairing ruptured pipe. 3,826,521, Cl. 286-15.000.

Wilkinson, Bruce L.; and Stolowitz, Michael C., to Pioneer Magnetics, Inc. Low leakage secondary circuit for a power transformer including conductive strups forming the secondary and connections for rectifying diodes. 3,826,967, Cl. 321-8.00r.

Will, Hannelore: *See—*
Pommer, Ernst-Heinrich; and Will, Hannelore, 3,826,639.

Williams Patent Crusher and Pulverizer Company: *See—*
Williams, Robert M., 3,826,208.

Williams, Robert M., to Williams Patent Crusher and Pulverizer Company. Apparatus and system for disposing of combustible and waste material. 3,826,208, Cl. 110-15.000.

Williams, Samuel D. Accessory wheel and drive device for a motor vehicle. 3,826,322, Cl. 180-1.0aw.

Willie, Edward N.; and Volkers, Walter K., deceased (by Volkers, Daphne J.). Antenna with large capacitive termination and low input circuit. 3,827,053, Cl. 343-701.000.

Williford, Jerry G., to Collins Radio Company. FSK oscillator. 3,826,999, Cl. 331-108.00r.

Willis, John George, to Solid State Technology, Inc. Alarm system. 3,827,038, Cl. 340-224.000.

Willoughby, Anthony Roy, to Bendix Corporation, The. Wind direction monitor scale converter. 3,827,037, Cl. 340-177.00r.

Wilson, Ernest V. Centrifugal marine propeller. 3,826,591, Cl. 416-177.000.

Wilson, Harold W., to Golden Cycle Corporation. Noble metals solvation agents-hydroxyketones and iodine and iodide. 3,826,750, Cl. 252-187.00r.

Wilson, James W.: *See—*
Sutton, Blaine M.; Walz, Donald T.; and Wilson, James W., 3,826,839.

Winicov, Murray W.: *See—*
Cantor, Abraham; and Winicov, Murray W., 3,826,826.

Winston, James F.; Greer, William J.; and Steele, Malcolm S., to Jones & Laughlin Steel Corporation. Calibration apparatus and method for an Eddy current Phase sensitive detector. 3,826,976, Cl. 324-40.000.

Wise, Robert G.; and Wiebe, Harold Dean, to Cincinnati Milacron Inc. Phase detector. 3,826,988, Cl. 328-133.000.

Wiskott, Erik, to Therachemie Chemisch Therapeutische GnbH. Process and composition for dyeing of human hair. 3,826,608, Cl. 8-10.100.

Wisniewski, Judith L.: *See—*
Broker, David C.; and Wisniewski, Judith L., 3,826,284.

Wiss, John W. Automotive vehicular dynamometer. 3,826,129, Cl. 73-117.000.

Withers, James G., Jr.; Dean, Harvey R.; and Ross, Stuart T., to Universal Oil Products Company. Advantageous configuration of tubing for internal boiling. 3,826,304, Cl. 165-1.000.

Wiz Corporation: *See—*
Ike, Ernest C., 3,826,176.

Wolf, Leopold. Tripod carrier. 3,826,513, Cl. 280-79.100.

Wolvering-Pentronix, Inc.: *See—*
De Santis, Raymond P.; and De Troyer, George D., 3,826,599.

Wong, Shi-Yin, to Hughes Aircraft Company. Room temperature nematic liquid crystals. 3,826,757, Cl. 252-408.000.

Woo, Frank: *See—*
Plough, Charles T.; Tvedt, Jan Otto; Arts, Marcus; Eastwood, H. Keith; and Woo, Frank, 3,826,924.

Wood, Charles E.: *See—*
Boyd, David M.; and Wood, Charles E., 3,826,719.

Wood, Robert J. Truck body with suspension rack. 3,826,529, Cl. 296-37.00r.

Wood, William Robert, to Deere & Company. Press operating mechanism for stack-forming machine. 3,826,070, Cl. 56-344.000.

Woodilla, John E., Jr.; Hunt, Gordon W.; and Green, Willard B., Jr., to Torrington Company, The. Thermal treatment of steel. 3,826,694, Cl. 148-15.000.

Woodroffe, Jaime A.; and Appleton, John P., to Massachusetts Institute of Technology. Fluorescent gas analyzer with calibration system. 3,826,920, Cl. 250-373.000.

Woods, Jack L.; and Pittman, Tobe A., to Elmet, Inc. Process for recovering gold and silver. 3,826,723, Cl. 204-110.000.

Woodworth, Chris C. Test set for tracing and checking the continuity of electrical circuits. 3,826,977, Cl. 324-61.000.

Woolslayer, Homer J.; and Jenkins, Cecil, to Moore, Lee C., Corporation. Oil well derrick with guide track for travelling block dolly. 3,826,472, Cl. 254-139.00.

Woycheshin, Elias A.: *See—*
Sobolev, Igor; and Woycheshin, Elias A., 3,826,775.

Wright, Carl Leonard; and Beacham, Harry Hoyt, to FMC Corporation. Polymerization controlled diallylic phthalate polymer compositions. 3,826,786, Cl. 260-78.4ua.

Wright, Roy F., to Phillips Petroleum Company. Block copolymers and oxidized carbon black compositions. 3,826,776, Cl. 260-41.50r.

Wright, Wayne E. Method and means for reducing the effect of electrostatic charges on paper in a copying system. 3,826,379, Cl. 271-208.000.

Wunder, William G., to Prince Corporation. Die casting apparatus. 3,826,302, Cl. 164-312.000.

Wurm, Robert J.; and Bergson, Arnold A., to Quest Electronics Corporation. Noise cancellation. 3,826,870, Cl. 179-1.00p.

Wylot, James Matthew: *See—*
Greco, Edgar Joseph; and Wylot, James Matthew, 3,826,661.

Wylot, James Matthew; and Greco, Edgar Joseph, to Eastman Kodak Company. High index optical glass. 3,826,660, Cl. 106-53.000.

Xerox Corporation: *See—*
Bevis, Paul A.; Hoyt, Hazen L., III; Miner, Thomas E.; Kuypers, Norbert T.; and Kuypers, Norbert T., 3,827,072.
Draugelis, Vaidevutis C.; Tsilibes, George N.; and Vineski, John E., 3,826,892.
Hudson, Frederick W., 3,826,568.
Mailloux, Louis D., 3,827,062.
Thompson, David M., 3,826,896.
Yabu, Toshiomi; Sakumoto, Hideki; and Namoto, Yoshiteru, to Matsushita Electric Industrial Company, Limited. Automatic tape threading mechanism. 3,826,447, Cl. 242-188.000.
Yakolvlev, Pavel Borisovich: *See—*
Brukovsky, Igor Pavlovich; Yakolvlev, Pavel Borisovich; and Gutterman, Kirill Davidovich, 3,826,889.
Yamada, Yasuo: *See—*
Kishino, Shigeo; Yamada, Yasuo; Kurahashi, Yoshio; and Kume, Toyohiko, 3,826,831.
Yamaguchi, Tetsuo: *See—*
Kinoshita, Kazuhisa; and Yamaguchi, Tetsuo, 3,826,692.
Yamakami, Hiroshi: *See—*
Nagashima, Shinichiro; Tsuchiya, Kaichi; Sakamoto, Yoshihiro; Yamakami, Hiroshi; and Tomari, Seiji, 3,826,747.
Yamamichi, Masayoshi, to Canon Kabushiki Kaisha. Automatic wind-up device for a camera having a memory type exposure control device. 3,827,067, Cl. 354-51.000.
Yamamoto, Hiroshi; Koike, Kengo; Ohgushi, Koji; and Tokumitsu, Iwao, to Nippon Kayaku Kabushiki Kaisha. Method for exterminating rodents and rodenticide compositions. 3,826,841, Cl. 424-323.000.
Yamamura Glass Kabushiki Kaisha: *See—*
Yasuhiro, Tomita, 3,826,126.
Yanagisawa, Takeshi; Tanikoshi, Kinzi; and Ono, Yusuke, to Canon Kabushiki Kaisha. Memory type exposure control system. 3,827,066, Cl. 354-51.000.
Yao, Cheng, to Factory Mutual Research Corporation. Method of fire protection using recirculation of combustion products to discharge a foam extinguishant. 3,826,313, Cl. 169-44.000.
Yaroshuk, Nicholas; and Burack, Robert D., to Westinghouse Electric Corporation. X-ray tire inspection apparatus. 3,826,919, Cl. 250-360.000.
Yashiro, Kazuyoshi. Method and apparatus for cold bending H-shaped steel. 3,826,121, Cl. 72-170.000.
Yasuhiro, Tomita, to Yamamura Glass Kabushiki Kaisha. Apparatus for testing pressure resistance of containers. 3,826,126, Cl. 73-37.000.
Yasui Sangyo Company Limited: *See—*
Koketsu, Shigeyoshi, 3,826,018.
Yasui, Toshiyuki: *See—*
Maruyama, Fumishige; Yasui, Toshiyuki; and Asada, Kaoru, 3,826,075.
Yinger, Robald Lee: *See—*
Butler, Arthur Devon; Debroka, Robert Lee; Moyer, Horace Bradley; and Yinger, Robald Lee, 3,826,358.
Yokokawa, Chikao, to Fujikaura Cable Works, Ltd., The. Process for producing hydrocarbon composition. 3,826,789, Cl. 260-92.80a.
Yokota, Yuji: *See—*
Hosaka, Iwao; and Yokota, Yuji, 3,827,083.
Yoldas, Bulent E.: *See—*
Hall, Dallas P.; and Yoldas, Bulent E., 3,826,635.
Yoshida Kogyo Kabushiki Kaisha: *See—*
Takamatsu, Ikuno, 3,825,977.
Youmans, Bill: *See—*
Nakagawa, George; and Youmans, Bill, 3,826,140.
Yuasa Battery Company Limited: *See—*
Murata, Kazuo; Ikeda, Hirotaka; Ashida, Katsuzi; and Sato, Uichi, 3,826,369.
Yuasa Kiko Company Limited: *See—*
Murata, Kazuo; Ikeda, Hirotaka; Ashida, Katsuzi; and Sato, Uichi, 3,826,369.
Yugen Kaisha Senshu Sekkei Jimusho: *See—*
Senshu, Haruzo; Koenuma, Masao; and Gibu, Yoshitaka, 3,826,007.
Zany Productions, Inc.: *See—*
Adams, Hunter D., 3,826,250.
Zappia, Anthony T. Case packer. 3,826,382, Cl. 214-1.0bb.
Zehren, James N., to TRW, Inc. Well pump torque absorber assembly. 3,826,525, Cl. 285-223.000.
Zenz, Frederick A. Folded transfer line reactor. 3,826,738, Cl. 208-153.000.
Zichis, Joseph, to Beckman Instruments, Inc. Reagents for the diagnosis of infections. 3,826,821, Cl. 424-12.000.
Zieger,Claus D., to Interbath, Inc. Adjustable mounting arrangement for hand-held shower head. 3,826,454, Cl. 248-75.000.
Ziegler, Karl: *See—*
Ziegler, Karl; Breil, Heinz; Holzkamp, Erhard; and Heinz, Martin (said Breil, Holzkamp and Martin assor. to said), 3,826,792.
Ziegler, Karl; Breil, Heinz; Holzkamp, Erhard; and Heinz, Martin, said Breil, Holzkamp and Martin assor. to said Ziegler, Karl. Polymerization of ethylenically unsaturated hydrocarbons. 3,826,792, Cl. 260-94.90b.
Zinnes, Harold; and Lindo, Neil A., to Warner-Lambert Company. Heterocyclic amides of 4-hydroxy-2H-1-benzothiopyran-3-carboxylic acid 1, 1-dioxide and process for their production. 3,826,791, Cl. 260-294.80c.
Zinser-Textilmaschinen GmbH.: *See—*
Grau, Gerhard, 3,826,071.
Zirconium Technology Corporation: *See—*
Baksay, Ivan, 3,826,124.
Zitelli, William E.: *See—*
Carlson, Norman R.; Burtnyk, Victor; and Zitelli, William E., 3,826,906.
Zoecon Corporation: *See—*
Henrick, Clive A.; and Siddall, John B., 3,826,804.
Zofchak, James T., to Addressograph-Multigraph Corporation. Print wheel setting and key lever reset means in printing machines. 3,826,190, Cl. 101-45.000.
Zuest, Armin: *See—*
Schindler, Walter; Schmid, Erich; and Zuest, Armin, 3,826,833.
Zundel, Arthur P., to National Can Corporation. Container opening means. 3,826,401, Cl. 220-47.000.
Zutz, Joseph. Device for teaching sculpturing. 3,826,020, Cl. .
364203: *See—*
Schultz, Robert F.; Cook, Edward H., Jr.; and 364203, 3,826,732.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 30TH DAY OF JULY, 1974

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Anderson, Leroy E., G. J. Munn, to Manufacturers Systems, Inc. Method of forming a rectangular heat duct. Re. 28,088, 7–30–74. Cl. 113—54.

Balassa, Leslie L., to Lescarden Ltd. Wound-healing cartilage powder. Re. 28,993, 7–30–74, Cl. 424—95.

Barker, Layle B., to Reynolds Metals Company. Apparatus for making a thermally insulating joint construction and an adjustable guide assembly for use therewith. Re. 28,084, 7–30–74, Cl. 29—200.

Barker, Layle B.: *See*—
Holliday, William H., and Barker. Re. 28,086.

Borg-Warner Corp.: *See*—
Boyd, Clinton A. Re. 28,094.

Boyd, Clinton A., to Borg-Warner Corp. Bearing arrangement for electric motors. Re. 28,094, 7–30–74, Cl. 310—90.

Chapin, Richard D. Water distributing hose. Re. 28,095, 7–30–74, Cl. 61—12.

Costello, Leonard C., to Hull Corp. Container stoppering apparatus. Re. 28,085, 7–30–74, Cl. 164—76.

Devol, George C. Controlled toggle mechanisms. Re. 28,089, 7–30–74, Cl. 74—52.

Frederiksen, Christopher W.: *See*—
Heusdens, Wilhelmus, and Frederiksen. Re. 28,091.

General Electric Co.: *See*—
Gluntz, Douglas M. Re. 28,090.

Gluntz, Douglas M. General Electric Co. Diffuser. Re. 28,090, 7–30–74, Cl. 417—196.

Heusdens, Wilhelmus, Frederiksen, C. W. to Ralston Purina Co. Protein fiber forming. Re. 28,091, 7–30–74, Cl. 426—148.

Hill, Donald E. S. D. Payne, and R. G. Walker, to Industria Products Inc. Apparatus for winding and placing coils in the slots of a stator. Re. 28,087, 7–30–74, Cl. 29—205.

Holliday, William H., and L. B. Barker. Reynolds Metals Co. Apparatus for making a thermally insulating joint construction. Re. 28,086, 7–30–74, Cl. 29—200.

Hull Corp.: *See*—
Costello, Leonard C. Re. 28,085.

Industria Products Inc.: *See*—
Hill, Donald E., Payne, and Walker. Re. 28,087.

Lescarden Ltd.: *See*—
Ballassa, Leslie L. Re. 28,993.

Manufacturers Systems, Inc.: *See*—
Anderson, Leroy E., and Munn. Re. 28,088.

Munn, Gerald J.: *See*—
Anderson, Leroy E., and Munn. Re. 28,088.

Payne, Stanley D.: *See*—
Hill, Donald E., Payne, and Walker. Re. 28,087.

Ralston Purina Co: *See*—
Heusdens, Wilhelmus, and Frederiksen. Re. 28,091.

Reynolds Metals Co.: *See*—
Barker, Layle B. Re. 28,084.
Holliday, William H., and Barker. Re. 28,086.

Ri-El Ricercle Elettroniche S.R.L.: *See*—
Righi, Nardino. Re. 28,092.

Righi, Nardino. Ri-El Ricercle Elettroniche S.R.L. Cassette tape read out devices. Re. 28,092, 7–30–74, Cl. 274—4.

Walker, Robert G.: *See*—
Hill, Donald E., Payne and Walker. Re. 28,087.

LIST OF DESIGN PATENTEES

Acton, Hugh C. The Vecta Group, Inc. Seat base or similar article. 232,202, 7–30–74. Cl. D6—196.

American Optical Corp.: *See*—
Armbruster, John T., and Wolfe. 232,208.

Ampro, Ltd.: *See*—
Hauser, Stephen G. 232,246.

Armbruster, John T. and R. J. Wolfe. American Optical Corp. Packaging tray. 232,208, 7–30–74, Cl. D9—242.

Ayukawa, Isao: *See*—
Yamada, Hiromichi, Ayukawa, and Iwamoto. 232,275.

Bartley, Keith David, Dewhirst, F. A., Genaro, D. M., and McGarvey, J. N., to Bell Telephone Laboratories, Inc. Combined public telephone enclosure and support. 232,222, 7–30–74, Cl. D13—1.

Bartley, Keith David, Dewhirst, F. A., Genaro, D. M., and McGarvey, J. N., to Bell Telephone Laboratories, Inc. Combined public telephone enclosure and support. 232,223, 7–30–74, Cl. D13—1.

Bee, James W. M., J. F. Tyson, and J. A. Mahan, to Bell Canada-Northern Electric Research Ltd. Telephone substation apparatus. 232,226, 7–30–74, Cl. D26—14.

Bee, James W. M., J. F. Tyson, and J. A. Mahan, to Bell Canada-Northern Electic Research Ltd. Base for a telephone set. 232,227, 7–30–74, Cl. D26—14.

Bell Canada-Northern Electric Research Ltd.: *See*—
Bee, James W. M. Tyson, and Mahan. 232,226.
Bee, James W. M., Tyson, and Mahan. 232,227.

Bell Telephone Laboratories, Inc.: *See*—
Bartley, Keith D., Dewhirst, Genaro, and McGarvey. 232,222.
Bartley, Keith D., Dewhirst, Genaro, and McGarvey. 232,223.

Berkey Photo, Inc.: *See*—
Emmerling, Ronald. 232,263.

Biderman, Sidney. Disposable litter container or similar article. 232,214, 7–30–74, Cl. D7—193.

Bloch, Jack. Foster Grant Co., Inc. Spectacle front. 232,262. 7–30–74, Cl. D57—1.

Brown, Gertrude, T.: *See*—
Brown, Robert C,. deceased. 232,259.

Brown, Robert C., deceased, by G. T. Brown, R. C. Brown, and J. L. Grant, to Magni-Case, Inc. Eyeglass case or similar article. 232,259, 7–30–74, Cl. D57—1.

Cates, Gaye G. Portable shampoo tray. 232,269, 7–30–74, Cl. D86—10.

Cauquis, Roger. Fishing lure. 232,235, 7–30–74, Cl. D22—27.

Caylor, Bradley J. Moon ball. 232,250, 7–30–74, Cl. D34—15.

Cicero, Edward L. Child's walking and rocking toy. 232,248, 7–30–74. Cl. D34—14.

Cook, Raymon W. Golf putter head. 232,252, 7–30–74, Cl. D34—5.

Current, Wayne A., to The Singer Company. Sewing machine frame. 232,266, 7–30–74, Cl. D70—1.

Dankert, Roger W., and W. R., to Rodan Industries, Inc. Temperature regulator. 232,217, 7–30–74, Cl. D10—50.

Dankert, William R.: *See*—
Dankert, Roger. W. 232,217.

Daratsos, Gregory, to Dars Met-All Industries, Inc. Fly trap. 232,233, 7–30–74, Cl. D22—19.

Dars Met-All Industries, Inc.: *See*—
Daratsos, Gregory. 232,233.

Davis, James J. and W. E. De Lozier, to International Telephone and Telegraph Corp. Desk telephone, 232,230, 7–30–74, Cl. D26—14.

De Fano, Dominic J.: *See*—
Kallman, Robert I. 232,253.

De Lozier, William R.: *See*—
Davis, James J. 232,230.

Dewhirst, Fred A.: *See*—
Bartley, Keith D., Genaro, and McGarvey. 232,222.
Bartley, Keith D., Genaro, and McGarvey. 232,223.

Dobyns, Richard W. Toothbrush holder, timer or similar device. 232,213, 7–30–74, Cl. D6—94.

Dobyns, Richard W. Timer or similar device. 232,224, 7–30–74, Cl. D10—40.

Donnelly, Kenneth J.: *See*—
Glover, William H., Schmidt and Donnelly. 232,212.

Edwards, William A., to Elmar Manufacturing Co. Combined holder and pourer for a wine bottle or the like. 232,209, 7–30–74, Cl. D7—70.

Elmar Manufacturing Co.: *See*—
Edwards, William A. 232,209.

Emmerling, Ronald, to Berkey Photo, Inc. Photographic camera. 232,263, 7–30–74, Cl. D61—1.

Ethyl Corp.: *See*—
Laborde, Joseph N. 232,236.
Laborde, Joseph N. 232,237.
LaBorde, Joseph N. 232,238.

Fettel, Bruce E., and G. M. Johnson. Shiley Laboratories, Inc. Pediatric tracheostomy tube. 232,268, 7–30–74, Cl. D83—1.

Foster Grant Co., Inc.: *See*—
Bloch, Jack. 232,262.

Freed, John P. Fishing pole holder. 232,234, 7–30–74, Cl. D22—13.

Fujiinami, Sadao, Orient Tokei Kakushiki Kaisha, a/t/a Orient Watch Co., Ltd. Calendar ring for a wristwatch. 232,218, 7–30–74, Cl. D10—122.

Fujinami, Sadao, Orient Tokei Kakushiki Kaisha, a/t/a Orient Watch Co., Ltd. Combined dial plate and ring for a timepiece face. 232,221, 7–30–74, Cl. D10—123.

Gardner, Irving. Sping temple for eyeglasses. 232,260, 7–30–74, Cl. D57—1.

Gebert, Karl: *See*—
Holmes, Brian H., Gerbert, and Weinhold. 232,274.

Geddis, David B., to Johnson & Johnson. Medication cabinet. 232,206, 7–30–74, D6—158.

Genaro, Donald M.: *See*—
Bartley, Keith D., Dewhirst, Genaro and McGarvey. 232,222.

Genaro, Donald M.: *See*—
Bartley, Keith D., Dewhirst, Genaro and McGarvey. 232,223.

General Electric Co.: *See*—
MacDonald, John B. 232,258.
Georgia-Pacific Corp.: *See*—
Hahn, Philip F. 232,272.
Glantz, Milton: *See*—
Glantz, Samuel N. and M. 232,270.
Glantz, Milton: *See*—
Glantz, Samuel N. and M. 232,271.
Glantz, Samuel N., and M. Glantz, Combined carrying case and tennis racket holder. 232,270, 7–30–74, Cl. D87—1.
Glantz, Samuel N., and M. Glantz. Combined carrying case and tennis racket holder. 232,271, 7–30–74, Cl. D87—1.
Glover, William H., G. E. Schmidt, Jr., and K. J. Donnelly, to Reynolds, R. J. Tobacco Co. Display stand for cigarette packages. 232,212, 7–30–74, Cl. D6—181.
Grant, Jean L.: *See*—
Brown Robert C., G. T., R. C. and Grant. 232,259.
Hahn, Philip F. to Georgia-Pacific Corp. Tree seedling carrier. 232,272, 7–30–74, Cl. D87—1.
Hauser, Stephen G. to Ampro, Ltd. Handle for a floor treating machine. 232,246, 7–30–74, Cl. D37—3.
Hentschel, Harry, to Siemens-Electrogerate GmbH. Toaster. 232,210, 7–30–74, Cl. D7—93.
Hoffman, Morton, to Select Magazines, Inc. Magazine rack. 232,201, 7–30–74, Cl. D6—114.
Holmes, Brian H., K. Gebert, H. Weinhold, deceased, by G. Weinhold, and M. Sammang, legal representative. Tire for a vehicle wheel. 232,274, 7–30–74, Cl. D90—20.
Hruby, John O., to Rain Jet Corp. Water fountain. 232,229, 7–30–74, Cl. D23—13.
Inohara, Masanobu, to Onitsuka Co., Ltd. Sport shoe. 232,200, 7–30–74, Cl. D2—311.
International Telephone and Telephone Corp.: *See*—
Davis, James J., and De Lozier. 232,230.
Iwamoto, Shuji: *See*—
Yamada, Hiromichi, Ayukawa and Iwamoto 232,275.
Johnson, George M.: *See*—
Fettel, Bruce E. and Johnson. 232,268.
Johnson & Johnson: *See*—
Geddis, David B. 232,206.
Kalimar, Inc.: *See*—
Kitagawa, Keisuke. 232,264.
Kallman, Robert I., and D. J. De Fano. Sunbeam Corp. Clock housing. 232,253, 7–30–74, Cl. D42—7.
Kaner, Samuel S. to Premium Sales Kabushiki Kaisha. Bottle rack. 232,204, 7–30–74, Cl. 6—153.
Kaner, Samuel S., to Premium Sales Kabushiki Kaisha. Bottle rack. 232,205, 7–30–74, Cl. D6—153.
Kay, Walter, and R. M. Poelvoorde, to said Poelvoorde assor. to said Kay. Combination litter container and advertising display device. 232,211, 7–30–74, Cl. 7—191.
Kitagawa, Keisuke, to Kalimar, Inc. Electronic flash unit for cameras. 232,264, 7–30–74, Cl. D61—1.
Koal, Karin. Game board. 232,247, 7–30–74, Cl. D34—5.
Korzenlewski, Robert. Gun sight. 232,232, 7–30–74, Cl. D22—8.
Laborde, Joseph N., to Ethyl Corp. Module for a filter media. 232,236. 7–30–74, Cl. D23—4.
Laborde, Joseph N., to Ethyl Corp. Module for a filter media. 232,237, 7–30–74, Cl. D23—4.
LaBorde, Joseph M., to Ethyl Corp. Module for a filter media. 232,238, 7–30–74, Cl. D23—4.
Laidig, Manfred R., to The Singer Co. Sewing machine frame or similar article. 232,265, 7–30–74, Cl. D70—1.
Lamb, Thomas. Lounge chair. 232,215, 7–30–74, Cl. D6—56.
Langieri, Michael. Measuring toy. 232,244, 7–30–74, Cl. D34—15.
Langieri, Michael, to Questor Corp. Carrying case for combined magnetic, peg and chalk boards. 232,231, 7–30–74, Cl. D25—1.
Levine, Irving. Strand of beads for a curtain element or the like. 232,207, 7–30–74, Cl. D6—205.
MacDonald, John B., to General Electric Co. Combined television and digital clock or similar article. 232,258, 7–30–74, Cl. D56—4.
Magni-Case, Inc.: *See*—
Brown Robert C., G. T., R. C. and Grant. 232,259.
Mahan, John A.: *See*—
Bee, James W. M., Tyson and Mahan. 232,226.
Bee, James W. M., Bee and Mahan. 232,227.
Markusen, Nancy R., to University of Idaho Research Foundation. Playground climber. 232,240, 7–30–74, Cl. D34—5.
Markusen, Nancy R., to University of Idaho Research Foundation. Playground climber. 232,241, 7–30–74, Cl. D34—5.
Markusen, Nancy R., to University of Idaho Research Foundation. Playground climber. 232,249, 7–30–74, Cl. D34—5.
McGarvey, John N.: *See*—
Bartley, Keith D., Dewhirst, Genaro and McGarvey. 232,222.
Bartley, Keith D., Dewhirst, Genaro and McGarvey. 232,223.
Milner, Alan D. Filing cabinet. 232,216, 7–30–74, Cl. D6—19.
Montgomery, Margaret W. Serving dish. 232,203, 7–30–74, Cl. D7—1.
Murai, Yumatsu, to Welling International Corp. Eyeglass frame. 232,261, 7–30–74, Cl. D57—1.
Onitsuka Co., Ltd.: *See*—
Inohara, Masanobu. 232,200.
Orient Tokei Kabushiki Kaisha, a/t/a Orient Watch Co., Ltd.: *See*—
Fujinami, Sadao. 232,218.
Fujinami, Sadao. 232,221.
Paulson, Ralph E. Dual lighting fixture. 232,257, 7–30–74, Cl. D48—23.
Poelvoorde, Raymond M.: *See*—
Kay, Walter, and Poelvoorde. 232,211
Premium Sales Kabushiki Kaisha: *See*—
Kaner, Samuel S. 232,204.
Kaner, Samuel S. 232,205.
Questor Corp.: *See*—
Langieri, Michael. 232,231.
Rain Jet Corp.: *See*—
Hruby, John O., Jr., 232,229.
Reynolds, R. J. Tobacco Co.: *See*—
Glover, William H., Schmidt and Donnelly. 232,212.
Rodan Industries, Inc.: *See*—
Dankert, Roger W., and W. R. 232,217.
Ross, Josef A., to Universal Trav-Ler Inc. Carrying bag. 232,273, 7–30–74, Cl. D87—5.
Sammang, Margarethe: *See*—
Holmes, Brian H., Gebert, Weinhold and Weinhold and Sammang. 232,274.
Sanshin Dengu Manufacturing Co., Ltd.: *See*—
Satoh, Taiji. 232,256.
Satoh, Taiji, to Sanshin Dengu Manufacturing Co., Ltd. Remote control search light. 232,256, 7–30–74. Cl. D48—20.
Schafler, Alberto B. Pyramidal horn. 232,239, 7–30–74, Cl. D34—15.
Schmidt, George E.: *See*—
Glover, William H., Schmidt and Donnelly. 232,212.
Select Magazines, Inc.: *See*—
Hoffman, Morton. 232,201.
Sharp Kabushiki Kaisha: *See*—
Yamada, Hiromichi, Ayukawa and Iwamoto. 232,275.
Shiley Laboratories, Inc.: *See*—
Fettel, Bruce E. and Johnson. 232,268.
Siemens-Electrogerate GmbH: *See*—
Hentschel, Harry. 232,210.
Singer Company, The: *See*—
Laidig, Manfred R. 232,265.
Current, Wayne A. 232,266.
Sirois, Donald H. Game board. 232,245, 7–30–74, Cl. D34—5.
Speight, Leo M. Novelty hammer. 232,251, 7–30–74, Cl. D34—15.
Star Industiral Company Ltd.: *See*—
Tongson, Kenneth Y. 232,254.
Tongson, Kenneth Y. 232,255.
Strong, Richard A. and R. M. Clock face. 232,219, 7–30–74, Cl. D10—126.
Strong, Rosa M.: *See*—
Strong, Richard A. and R. M. 232,219.
Sunbeam Corp.: *See*—
Kallman, Robert I. and De Fano. 232,253.
Sweat, Nealy A. Boat. 232,225, 7–30–74, Cl. D12—63.
Taylor, Wilson G. Bowling ball finger hole sizing and positioning guide. 232,220, 7–30–74, Cl. D10—70.
Thorp, Mildred B.: *See*—
Thorp, William J. and M. B. 232,243.
Thorp, William J., deceased, by Thorp, Mildred B. Toy microphone and stand. 232,243, 7–30–74, Cl. D34—15.
Tongson, Kenneth Y., to Star Industrial Company Ltd. Lamp shade. 232,254, 7–30–74, Cl. D48—16.
Tongson, Kenneth Y., to Star Industrial Company Ltd. Lamp shade. 232,255, 7–30–74, Cl. D48—16.
Tyson, John F.: *See*—
Bee, James W. M., Tyson and Mahan. 232,226.
Bee, James W. M., Tyson and Mahan. 232,227.
Universal Trav-Ler Inc.: *See*—
Ross, Josef A. 232,273.
University of Idaho Research Foundation: *See*—
Markusen, Nancy R. 232,240.
Markusen, Nancy R. 232,241.
Markusen, Nancy R. 232,249.
Vecta Group, Inc., The: *See*—
Acton, Hugh C. 232,202.
Weinhold, Gertrud: *See*—
Holmes, Brian H., Gebert, Weinhold and Weinhold and Sammang. 232,274.
Weinhold, Hannelore: *See*—
Holmes, Brian H., Gebert, Weinhold and Weinhold and Sammang. 232,274.
Welling International Corp.: *See*—
Murai, Yumatsu. 232,261.
Wells, George W. Awning. 232,228, 7–30–74, Cl. D21—6.
Wolfe, Russell J. *See*—
Armbruster, John T. and Wolfe. 232,208.
Yamada, Hiromichi, I. Ayukawa, and S. Iwamoto, to Sharp Kabushiki Kaisha. Dry shaver. 232,275, 7–30–74, Cl. D95—3.
Young, George G. Walking stilt. 232,242, 7–30–74, Cl. D34—14.
Zepell, Nathan A. Mechanical writing instrument. 232,267, 7–30–74, Cl. D74—17.

CLASSIFICATION OF PATENTS

ISSUED JULY 30, 1974

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

3R	3,825,952
14K	3,825,953
115	3,825,954
150	3,825,955

CLASS 3

1	3,825,956
	3,825,957

CLASS 4

240	3,825,958

CLASS 5

8	3,825,959
247	3,825,960

CLASS 7

1H	3,825,961

CLASS 8

10.1	3,826,608
21R	3,826,609
94.26	3,826,610
115.5	3,826,611

CLASS 9

7	3,825,962

CLASS 11

1R	3,825,963
3	3,825,964

CLASS 13

6	3,826,858

CLASS 15

21D	3,825,965
	3,825,967
87	3,825,968
97R	3,825,969
230.11	3,825,970
250.04	3,825,966
250.27	3,825,971
373	3,825,972

CLASS 16

189	3,825,973

CLASS 19

66R	3,825,974
150	3,825,975

CLASS 21

94	3,826,612

CLASS 23

230B	3,826,613
	3,826,616
230M	3,826,617
230R	3,826,614
	3,826,615
232R	3,826,618
253TP	3,826,620
253R	3,826,619
259	3,826,621
	3,826,622
281	3,826,623
288S	3,826,624
301SP	3,826,625

CLASS 24

11F	3,825,976
205.1C	3,825,977
205.13R	3,825,978
205.19	3,825,979
230AN	3,825,980

CLASS 29

96	3,825,981
149.5NM	3,825,982
149.5B	3,825,983
156.8H	3,825,984
178	3,825,985
191.6	3,826,626
195	3,826,627
	3,826,628
	3,826,629
	3,826,630
200A	Re.28,084
	Re.28,086
203DT	3,825,986
203H	3,825,987
205D	Re.28,087
208R	3,825,988
211D	3,825,989
268	3,825,990
412	3,825,991
436	3,825,992
472.9	3,825,993
498	3,825,994
571	3,825,995
	3,825,996
578	3,825,997
600	3,825,998
626	3,825,999
630R	3,826,000

CLASS 30

90.1	3,826,001

CLASS 32

2	3,826,002
8	3,826,003
58	3,826,004
69	3,826,005

CLASS 33

76R	3,826,006
77	3,826,007
147F	3,826,008
169R	3,826,009
	3,826,010
185R	3,826,011
246	3,826,012
390	3,826,013

CLASS 34

1	3,826,014
57R	3,826,015
152	3,826,016
225	3,826,017
229	3,826,018

CLASS 35

17	3,826,019
26	3,826,020
34	3,826,021

CLASS 36

2.5AL	3,826,022

CLASS 37

58	3,826,023
142A	3,826,024
142R	3,826,025

CLASS 40

10B	3,826,026
32	3,826,027
70	3,826,028
107	3,826,029
301	3,826,030

CLASS 42

1F	3,826,031

CLASS 43

42.5	3,826,033
44.83	3,826,034
98	3,826,035
100	3,826,032
131	3,826,036

CLASS 44

52	3,826,631
66	3,826,632
72	3,826,633

CLASS 46

84	3,826,037
96	3,826,038
98	3,826,039

CLASS 47

30	3,826,040
41.12	3,826,041

CLASS 49

213	3,826,042
360	3,826,043
420	3,826,044

CLASS 51

170TL	3,826,046
170T	3,826,045
277	3,826,047

CLASS 52

11	3,826,048
173	3,826,049
212	3,826,050
227	3,826,051
293	3,826,052
309	3,826,053
	3,826,054
	3,826,055
584	3,826,056
641	3,826,057

CLASS 53

14	3,826,058
27	3,826,059
48	3,826,060
182	3,826,061
255	3,826,062

CLASS 55

128	3,826,063
204	3,826,064
309	3,826,065
379	3,826,066
524	3,826,067

CLASS 56

12.7	3,826,068
328R	3,826,069
344	3,826,070

CLASS 57

56	3,826,071
58.57	3,826,072
77.33	3,826,073
140G	3,826,074
157TS	3,826,075

CLASS 58

116R	3,826,076

CLASS 60

39.02	3,826,077
	3,826,078
39.06	3,826,079
39.55	3,826,080
39.62	3,826,086
39.63	3,826,081
39.65	3,826,082
	3,826,083
39.66	3,826,084
39.75	3,826,085
200	3,826,087
261	3,826,088
290	3,826,089
445	3,826,090
644	3,826,091
647	3,826,092
665	3,826,093
686	3,826,094
	3,826,095
709	3,826,096
719	3,826,097

CLASS 61

12	Re.28,095
46	3,826,098
46.5	3,826,099

CLASS 62

63	3,826,100
82	3,826,101
137	3,826,102
140	3,826,103
149	3,826,104
262	3,826,105
275	3,826,106
279	3,826,107

CLASS 64

9R	3,826,108
27R	3,826,109

CLASS 65

34	3,826,634
134	3,826,635
182R	3,826,636
	3,826,637

CLASS 66

9R	3,826,110
14	3,826,111

CLASS 68

8	3,826,112
12R	3,826,113

CLASS 70

14	3,826,114
258	3,826,115
388	3,826,116
416	3,826,117
456B	3,826,118

CLASS 71

21	3,826,638
68	3,826,639
86	3,826,640
	3,826,641
91	3,826,642
94	3,826,643
98	3,826,644

CLASS 72

36	3,826,119
46	3,826,120
170	3,826,121
264	3,826,122
349	3,826,123
367	3,826,124

CLASS 73

4R	3,826,125
37	3,826,126
67.5R	3,826,127
88E	3,826,128
117	3,826,129
141A	3,826,130
	3,826,131
143	3,826,132
152	3,826,133
155	3,826,134
171	3,826,135
189	3,826,136
194R	3,826,137
258	3,826,138
311	3,826,139
343.5	3,826,140
356	3,826,141
	3,826,142
398C	3,826,143
425.4R	3,826,144
432R	3,826,145
462	3,826,146

CLASS 74

198	3,826,157
200	3,826,147
	3,826,148
242.8	3,826,149
250R	3,826,150
400	3,826,151
424.5	3,826,152
459	3,826,153
505	3,826,154
519	3,826,155
520	Re.28,089
527	3,826,156
866	3,826,158

CLASS 75

.5R	3,826,645
13	3,826,646
60	3,826,647
109	3,826,648
124	3,826,649

CLASS 76

82	3,826,159

CLASS 81

5.1R	3,826,160

CLASS 82

2B	3,826,161
3	3,826,162

CLASS 83

18	3,826,163
23	3,826,164
110	3,826,165
132	3,826,166
171	3,826,167
203	3,826,168
324	3,826,169
657	3,826,170

CLASS 84

1.17	3,826,859
297S	3,826,171

CLASS 89

36A	3,826,172

CLASS 90

4	3,826,173

CLASS 91

363A	3,826,174
369B	3,826,175

CLASS 92

25	3,826,176

CLASS 93

1C	3,826,177
1R	3,826,178

CLASS 96

35.1	3,826,650
	3,826,651
48PD	3,826,652
50R	3,826,653
66HD	3,826,654
76R	3,826,655
100	3,826,656

CLASS 98

40VM	3,826,179
43	3,826,180
66	3,826,181
98	3,826,182
116	3,826,183

CLASS 99

404	3,826,184
548	3,826,185

CLASS 100

25	3,826,186
53	3,826,187
100	3,826,188
229A	3,826,189

CLASS 101

45	3,826,190
103	3,826,191
335	3,826,192

CLASS 102

70.2G	3,826,193
79	3,826,194

CLASS 104

2	3,826,195
126	3,826,196
130	3,826,197

CLASS 105

90A	3,826,198
	3,826,199
	3,826,200
	3,826,201
182R	3,826,202
282P	3,826,203

CLASS 106

17	3,826,657
38.3	3,826,658
39.6	3,826,659
53	3,826,660
	3,826,661
56	3,826,662
90	3,826,663
104	3,826,665
128	3,826,666
259	3,826,667
285	3,826,668
287R	3,826,669
308Q	3,826,670

CLASS 108

2	3,826,204
51	3,826,205
64	3,826,206
108	3,826,207

CLASS 110

15	3,826,208

CLASS 111

80	3,826,209

CLASS 113

54	Re.28,088

CLASS 114

24	3,826,210
114	3,826,211
125	3,826,212
144C	3,826,213
210	3,826,214
221R	3,826,215

CLASS 115

.5A	3,826,216
12R	3,826,217
34R	3,826,218
35	3,826,219
70	3,826,220

CLASS 116

114V	3,826,221
121	3,826,222
174	3,826,223

CLASS 117

3	3,826,671
17.5	3,826,672
62.2	3,826,673
	3,826,674
75	3,826,675
76P	3,826,677
76T	3,826,676
81	3,826,678
100B	3,826,679
119.6	3,826,680
135.1	3,826,681
139.5CQ	3,826,682
212	3,826,683

CLASS 118

2	3,826,224
48	3,826,225
49.1	3,826,226
60	3,826,227
255	3,826,228

CLASS 119

17	3,826,229
28	3,826,230
51.12	3,826,231
157	3,826,232

CLASS 123

119R	3,826,233
139AW	3,826,234
141	3,826,235
148R	3,826,236
179L	3,826,237

CLASS 124

8	3,826,238
23R	3,826,239

CLASS 126

355	3,826,240

CLASS 128

1R	3,826,241
	3,826,242
2.06E	3,826,245
	3,826,246
2.08	3,826,247
2.1B	3,826,243
2.1E	3,826,244
11	3,826,248
24R	3,826,249
24.2	3,826,250
80F	3,826,251
91R	3,826,252
132D	3,826,253
133	3,826,254
194	3,826,255
214R	3,826,257
214.4	3,826,256
260	3,826,258
269	3,826,259
272	3,826,260
	3,826,261
283	3,826,262
303.1	3,826,263
	3,826,264
419P	3,826,265
435	3,826,266

CLASS 130

30H	3,826,267

CLASS 131

140C	3,826,268

CLASS 134

123	3,826,269

CLASS 135

4R	3,826,270
5AT	3,826,271
20R	3,826,272

CLASS 136

28	3,826,684
83R	3,826,685
120FC	3,826,686
133	3,826,687

CLASS 137

1	3,826,273
119	3,826,274
355.2	3,826,275
389	3,826,276
493	3,826,277
599	3,826,278

604 3,826,279
624.14 3,826,280
625.31 3,826,281
625.69 3,826,282
627.5 3,826,283
833 3,826,284

CLASS 138

103 3,826,285
114 3,826,286
175 3,826,287
178 3,826,288

CLASS 139

127R 3,826,289

CLASS 140

92.7 3,826,290

CLASS 141

59 3,826,291
114 3,826,292
142 3,826,293
258 3,826,294

CLASS 144

34E 3,826,295

CLASS 148

2 3,826,688
3 3,826,689
11.5A 3,826,690
12 3,826,691
3,826,692
12.1 3,826,693
15 3,826,694
26 3,826,695
31.57 3,826,696
37 3,826,697
175 3,826,699
177 3,826,700
191 3,826,698

CLASS 150

3 3,826,296

CLASS 152

354 3,826,297
359 3,826,298

CLASS 156

64 3,826,701
86 3,826,702
189 3,826,703
306 3,826,704
505 3,826,705
566 3,826,706

CLASS 157

1.24 3,826,299

CLASS 160

104 3,826,664
179 3,826,300

CLASS 161

57 3,826,707
162 3,826,708
217 3,826,709

CLASS 162

36 3,826,710
102 3,826,711
157R 3,826,712
205 3,826,713

CLASS 164

46 3,826,301
76 Re.28,085
312 3,826,302
335 3,826,303

CLASS 165

1 3,826,304
26 3,826,305
47 3,826,306

CLASS 166

120 3,826,307
224S 3,826,309
246 3,826,308
276 3,826,310
295 3,826,311
307 3,826,312

CLASS 169

44 3,826,313

CLASS 172

59 3,826,314
514 3,826,315

CLASS 173

73 3,826,316

CLASS 174

73SC 3,826,860
84C 3,826,861
102R 3,826,862

CLASS 175

162 3,826,317

CLASS 177

25 3,826,318
3,826,319
170 3,826,320
210 3,826,321

CLASS 178

5.1 3,826,863
6.8 3,826,864
7.1 3,826,865
3,826,866
67 3,826,868
69.5R 3,826,869

CLASS 179

1B 3,826,871
1P 3,826,870
15A 3,826,872
18GF 3,826,873
18HA 3,826,874
37 3,826,875
84C 3,826,876
100.1B 3,826,877
170.6 3,826,878

CLASS 180

1AW 3,826,322
5R 3,826,323
6.5 3,826,324
9.54 3,826,325
25R 3,826,326
69.1 3,826,327
79.2R 3,826,328
116 3,826,330
125 3,826,329

CLASS 181

33HC 3,826,331
35A 3,826,332
153 3,826,333

CLASS 182

2 3,826,334
10 3,826,335
15 3,826,336
91 3,826,337

CLASS 184

11A 3,826,338

CLASS 188

1B 3,826,339
3,826,340
65.5 3,826,341
171 3,826,342
282 3,826,343

CLASS 191

12.4 3,826,879
25 3,826,880
32 3,826,881

CLASS 194

2 3,826,344

CLASS 195

31F 3,826,714
66R 3,826,715
3,826,716
103.5R 3,826,717

CLASS 197

52 3,826,345
127R 3,826,346

CLASS 198

20R 3,826,347
34 3,826,348
81 3,826,349
82 3,826,350
127R 3,826,351
136 3,826,352
139 3,826,353
171 3,826,354
220BA 3,826,355
220CA 3,826,356

CLASS 200

5A 3,826,882
61.11 3,826,883
159B 3,826,885
159R 3,826,884
266 3,826,886

CLASS 202

181 3,826,718

CLASS 203

1 3,826,719
20 3,826,720

CLASS 204

1T 3,826,971
39 3,826,721
50R 3,826,722
110 3,826,723
140 3,826,724
149 3,826,725
157.1H 3,826,726
158R 3,826,727
192 3,826,728
3,826,729
195P 3,826,730
290F 3,826,731
3,826,732
3,826,733
299 3,826,734

CLASS 206

45.33 3,826,357
204 3,826,358
216 3,826,359
312 3,826,360
409 3,826,361
424 3,826,362
430 3,826,363

CLASS 208

21 3,826,735
59 3,826,736
143 3,826,737
153 3,826,738
157 3,826,739

CLASS 209

3 3,826,364
5 3,826,365
74 3,826,366
243 3,826,367

CLASS 210

19 3,826,740
50 3,826,741
63 3,826,742
82 3,826,368
3,826,369
109 3,826,370
169 3,826,371
172 3,826,372
198C 3,826,373
225 3,826,374
291 3,826,375
519 3,826,376

CLASS 211

41 3,826,377
60SK 3,826,378

CLASS 212

125 3,826,380

CLASS 214

1BB 3,826,382
1BD 3,826,383
1BT 3,826,381
13 3,826,384
17CA 3,826,385
77R 3,826,386
90 3,826,387
140 3,826,388
152 3,826,389
450 3,826,390
506 3,826,391
672 3,826,392
674 3,826,393

CLASS 215

9 3,826,394
3,826,395
234 3,826,396
295 3,826,397

CLASS 219

74 3,826,888
98 3,826,893
121EB 3,826,889
124 3,826,894
131R 3,826,890
213 3,826,891
216 3,826,892
382 3,826,895
388 3,826,896
456 3,826,897
462 3,826,898
497 3,826,887

CLASS 220

1.5 3,826,398
15 3,826,399
29 3,826,400
47 3,826,401
48 3,826,402
54 3,826,403
70 3,826,404

CLASS 221

1 3,826,405
58 3,826,406
63 3,826,407

CLASS 222

70 3,826,408
107 3,826,409
178 3,826,410
235 3,826,411
397 3,826,412
402.13 3,826,413

CLASS 224

2F 3,826,414

CLASS 225

94 3,826,415

CLASS 226

22 3,826,416
107 3,826,417
190 3,826,418

CLASS 227

136 3,826,419

CLASS 229

45 3,826,420
51AS 3,826,421
68R 3,826,422

CLASS 235

61.11E 3,826,900
92PC 3,826,899
150.3 3,826,901
151.1 3,826,903
3,826,904
151.12 3,826,905
151.21 3,826,906
151.3 3,826,902
153AC 3,826,907
3,826,909
153R 3,826,908

CLASS 236

12R 3,827,016

CLASS 238

264 3,826,423
3,826,424

CLASS 239

15 3,826,425
127 3,826,426
186 3,826,427
222.11 3,826,428
460 3,826,429
523 3,826,430
551 3,826,431
556 3,826,432

CLASS 240

6.4B 3,826,910
41.35R 3,826,911
102R 3,826,912
103R 3,826,913
106R 3,826,914

CLASS 241

14 3,826,433
171 3,826,435
186R 3,826,436
3,826,437

CLASS 242

45 3,826,438
54R 3,826,439
55.19A 3,826,440
55.53 3,826,441
75.5 3,826,442
105 3,826,443
118.11 3,826,444
118.32 3,826,445
185 3,826,446
188 3,826,447

CLASS 244

1SS 3,826,451
3,826,452
91 3,826,448
100R 3,826,449
103R 3,826,450
122R 3,826,434

CLASS 248

75 3,826,454
97 3,826,455
239 3,826,458
287 3,826,459
375 3,826,456
399 3,826,457

CLASS 249

27 3,826,460

CLASS 250

208 3,826,916
302 3,826,917
343 3,826,918
360 3,826,919
373 3,826,920
390 3,826,921
471 3,826,922
572 3,826,923

CLASS 251

7 3,826,461
58 3,826,462
120 3,826,463
149.9 3,826,464
192 3,826,466
284 3,826,467
293 3,826,468
335B 3,826,465

CLASS 252

14 3,826,743
23 3,826,744
32.7E 3,826,745
51.5R 3,826,746
62.1 3,826,747
99 3,826,748
121 3,826,749
187R 3,826,750
300 3,826,751
3,826,752
301.1R 3,826,753
3,826,754
301.1S 3,826,755
316 3,826,756
408 3,826,757
455R 3,826,758
525 3,826,759

CLASS 254

78 3,826,469
86R 3,826,470
131 3,826,471
139 3,826,472
164 3,826,473

CLASS 259

4 3,826,474
14 3,826,475
154 3,826,476
191 3,826,477

CLASS 260

2EP 3,826,760
2.1R 3,826,761
2.5AJ 3,826,762
3,826,764
2.5AM 3,826,763
2.5FP 3,826,766
2.5B 3,826,765
17.4GC 3,826,767
29.2TN 3,826,768
3,826,769
29.4R 3,826,770
29.6H 3,826,771
31.2MR 3,826,772
37SB 3,826,773
42.14 3,826,775
3,826,776
42.18 3,826,777
42.276 3,826,774
42.47 3,826,778
45.85B 3,826,781
45.85S 3,826,780
45.9R 3,826,779
46.5E 3,826,782
47C 3,826,783
47UA 3,826,784
78L 3,826,785
78.4UA 3,826,786
85.5R 3,826,787
91.3VA 3,826,788
92.8A 3,826,789
94.2M 3,826,790
94.9B 3,826,792
112R 3,826,795
114.5 3,826,793
3,826,794
3,826,796
125 3,826,797
139 3,826,798
146T 3,826,799
147 3,826,800
202 3,826,801
210AB 3,826,802
211.5R 3,826,803
294.8C 3,826,791
399 3,826,804
869 3,826,805
3,826,806

CLASS 264

39 3,826,807

CLASS 266

23R 3,826,478
41 3,826,479

CLASS 267

3 3,826,507
9B 3,826,480
152 3,826,481

CLASS 269

88 3,826,482
203 3,826,483
299 3,826,484

CLASS 271

106 3,826,485
204 3,826,486
208 3,826,379
263 3,826,487

CLASS 272

57T 3,826,488
58 3,826,490
69 3,826,491
85 3,826,492

CLASS 273

1R 3,826,493
3,826,494
32R 3,826,495
108 3,826,496
109 3,826,497
130B 3,826,499
134AD 3,826,498
151 3,826,500
176A 3,826,501
183B 3,826,502
183C 3,826,503

CLASS 274

4E Re.28,092
15R 3,826,504
23A 3,826,505

CLASS 277

92 3,826,506
216 3,826,508

CLASS 280

11.13T 3,826,518
11.35M 3,826,509
11.37K 3,826,510
36R 3,826,511
43.12 3,826,512
79.1 3,826,513
96.2 3,826,514
106T 3,826,515
407 3,826,516
511 3,826,517

CLASS 281

15 3,826,519

CLASS 285

3,826,521
18 3,826,522
39 3,826,523
61 3,826,524
223 3,826,525

CLASS 292

30 3,826,520
346 3,826,526
359 3,826,527

CLASS 296

20 3,826,528
37R 3,826,529
65R 3,826,530

CLASS 297

188 3,826,531
248 3,826,453
270 3,826,532
445 3,826,533

CLASS 298

1A 3,826,534

CLASS 299

1 3,826,535
14 3,826,536
3,826,537

CLASS 301

63DD 3,826,538

CLASS 302

27 3,826,539
57 3,826,540

CLASS 303

21F 3,826,541
3,826,542

CLASS 305

10 3,826,543

CLASS 307

117 3,826,924
133 3,826,925
221 3,826,926
263 3,826,927
265 3,826,928
308 3,826,929
311 3,826,930

CLASS 308

160 3,826,544
189R 3,826,545
234 3,826,546
238 3,826,547

CLASS 310

8.1 3,826,931
3,826,932
41 3,826,934
71 3,826,935
87 3,826,936
90 Re.28,094
104 3,826,938
105 3,826,937
154 3,826,939
168 3,826,933
211 3,826,940
217 3,826,941
232 3,826,942

CLASS 312

38 3,826,548
59 3,826,549
107 3,826,550
140 3,826,551
214 3,826,552
253 3,826,553
330 3,826,554

CLASS 313

153 3,826,945
218 3,826,946
268 3,826,947
293 3,826,948
383 3,826,943
473 3,826,944

CLASS 315

169R 3,826,949
267 3,826,950

CLASS 317

33SC 3,826,951
81 3,826,952
100 3,826,953
135 3,826,954
141S 3,826,955
234R 3,826,956
3,826,957

CLASS 318

39 3,826,965
113 3,826,958
139 3,826,959
223 3,826,960
308 3,826,961
376 3,826,962
471 3,826,963
602 3,826,964
696 3,826,966

CLASS 321

8R	3,826,967

CLASS 322

99	3,826,968

CLASS 323

19	3,826,969
	3,826,970

CLASS 324

.5R	3,826,972
3	3,826,973
34TA	3,826,975
36	3,826,974
40	3,826,976
51	3,826,977
58.5A	3,826,978
61P	3,826,980
61R	3,826,979
72.5	3,826,981
99D	3,826,982
113	3,826,982
158P	3,826,984
173	3,826,985

CLASS 325

16	3,826,986
361	3,826,987

CLASS 328

133	3,826,988
270	3,826,989

CLASS 329

50	3,826,990

CLASS 330

1A	3,826,991
4.3	3,826,992

CLASS 331

1	3,826,993
11	3,826,994
38	3,826,995
94.5C	3,826,998
94.5G	3,826,997
94.5	3,826,996
108R	3,826,999

CLASS 332

7.51	3,827,000

CLASS 333

9	3,827,001
72	3,827,002

CLASS 335

285	3,827,019
	3,827,020
	3,827,021

CLASS 336

62	3,827,017
84	3,827,018

CLASS 337

77	3,827,009
168	3,827,010
276	3,827,011
320	3,827,012
354	3,827,013
407	3,827,014
414	3,827,015

CLASS 339

21R	3,827,006
49R	3,827,007
95D	3,827,008
180	3,827,003
221R	3,827,004
258P	3,827,005

CLASS 340

3R	3,827,022
10	3,827,023
70	3,827,024
146.3F	3,827,025
167A	3,827,026
172.5	3,827,027
	3,827,028
	3,827,029
	3,827,030
	3,827,031
173CA	3,827,034
173SP	3,827,032
173R	3,827,033
174TF	3,827,035
	3,827,036
177R	3,827,037
224	3,827,038
227.1	3,827,039
267R	3,827,040
324AD	3,827,041
335	3,827,042
336	3,827,043
347AD	3,827,044
	3,827,045
	3,827,046
347DA	3,827,047
366R	3,827,048

CLASS 343

7.3	3,827,049
102	3,827,050
176	3,827,051
178	3,827,052
701	3,827,053
708	3,827,054
754	3,827,055

CLASS 346

74E	3,826,915
	3,827,056
75	3,827,057
86	3,827,058

CLASS 350

3.5	3,826,555
	3,826,556
17	3,826,557
86	3,826,559
90	3,826,558
96WG	3,826,560
204	3,826,561
286	3,826,562
294	3,827,059
303	3,826,563

CLASS 351

45	3,826,564
121	3,826,565

CLASS 352

12	3,826,566
137	3,826,567

CLASS 354

5	3,827,062
15	3,827,063
25	3,827,064
51	3,827,060
	3,827,065
	3,827,066
	3,827,067
63	3,827,068
64	3,827,069
105	3,827,070
126	3,827,071
195	3,827,061
278	3,827,072

CLASS 355

3R	3,826,570
3	3,826,568
14	3,826,569
46	3,826,571
93	3,826,572
133	3,826,573

CLASS 356

103	3,826,574
106LR	3,826,575
164	3,826,576
201	3,826,577
237	3,826,578
247	3,826,579

CLASS 357

39	3,827,073

CLASS 358

15	3,827,074
41	3,827,075
58	3,827,076
67	3,826,867

CLASS 360

16	3,827,077
45	3,827,078
79	3,827,079
80	3,827,080
105	3,827,081
106	3,827,082
121	3,827,083
132	3,826,489

CLASS 401

	3,826,580
197	3,826,581

CLASS 402

4	3,826,582

CLASS 404

67	3,826,583

CLASS 408

35	3,826,584
41	3,826,585

CLASS 415

42	3,826,586
60	3,826,587
90	3,826,588
170A	3,826,589

CLASS 416

27	3,826,590
177	3,826,591
222	3,826,592

CLASS 417

53	3,826,593
196	Re.28,090
245	3,826,594
370	3,826,595

CLASS 418

61B	3,826,596
131	3,826,597

CLASS 423

54	3,826,808
61	3,826,809
212	3,826,810
229	3,826,811
242	3,826,812
328	3,826,813
336	3,826,814
356	3,826,815
497	3,826,816
499	3,826,817
515	3,826,818
531	3,826,819
645	3,826,820

CLASS 424

12	3,826,821
27	3,826,822
80	3,826,823
95	Re.28,093
112	3,826,824
145	3,826,825
149	3,826,826
164	3,826,827
184	3,826,828
210	3,826,831
211	3,826,830
250	3,826,832
	3,826,833
263	3,826,834
267	3,826,835
273	3,826,836
	3,826,837
275	3,826,838
279	3,826,839
289	3,826,846
305	3,826,840
323	3,826,841
325	3,826,842
326	3,826,843
327	3,826,844
365	3,826,845

CLASS 425

7	3,826,598
78	3,826,599
123	3,826,600
338	3,826,601
378	3,826,602
461	3,826,603

CLASS 426

3	3,826,847
7	3,826,848
15	3,826,849
25	3,826,850
65	3,826,851
132	3,826,852
	3,826,853
148	Re.28,091
163	3,826,854
175	3,826,855
190	3,826,829
213	3,826,856
214	3,826,857

CLASS 431

12	3,826,604
66	3,826,605
295	3,826,606

CLASS 432

105	3,826,607

CLASSIFICATION OF DESIGNS

D2—	311	232,200
D6—	56	232,215
	94	232,213
	114	232,201
D9—	153	232,204
D10—		232,205
	158	232,206
	181	232,212
	190	232,216
	196	232,202
	205	232,207
D7—	1	232,203
	70	232,209
	93	232,210
	191	232,211
	193	232,214
	242	232,208
	40	232,224
	50	232,217
	70	232,220
	122	232,218
	124	232,221
	126	232,219
D12—	63	232,225
D13—	1L	232,222
		232,223
D21—	6B	232,228
D22—	8	232,232
	13	232,234
	19	232,233
	27	232,235
D23—	4	232,236
		232,237
		232,238
	13	232,229
D25—	1R	232,231
D26—	14A	232,226
		232,227
		232,230
D34—	5BB	232,245
	GH	232,252
	SS	232,247
	H	232,240
		232,241
		232,249
	14E	232,242
		232,248
	15AJ	232,250
	A	232,243
		232,244
		232,251
	C	232,239
D37—	3	232,246
D42—	7R	232,253
D48—	16D	232,254
		232,255
	20K	232,256
	23R	232,257
D56—	4D	232,258
D57—	1A	232,260
	F	232,261
		232,262
		232,259
D61—	B	232,263
	F	232,264
D70—		232,265
		232,266
D74—	17B	232,267
D83—	1K	232,268
D86—	10F	232,269
D87—	1R	232,270
		232,271
		232,272
	5G	232,273
D90—	20R	232,274
D95—	3A	232,275

GEOGRAPHICAL INDEX OF RESIDENCE OF INVENTORS

(U.S. States, Territories and Armed Forces, the Commonwealth of Puerto Rico, and the Canal Zone)

Alabama..... 1
Alaska..... 2
American Samoa..... 3
Arizona..... 4
Arkansas..... 5
California..... 6
Canal Zone..... 7
Colorado..... 8
Connecticut..... 9
Delaware..... 10
District of Columbia..... 11
Florida..... 12
Georgia..... 13
Guam..... 14
Hawaii..... 15
Idaho..... 16
Illinois..... 17
Indiana..... 18
Iowa..... 19
Kansas..... 20
Kentucky..... 21
Louisiana..... 22
Maine..... 23
Maryland..... 24
Massachusetts..... 25
Michigan..... 26
Minnesota..... 27
Mississippi..... 28
Missouri..... 29
Montana..... 30
Nebraska..... 31
Nevada..... 32
New Hampshire..... 33
New Jersey..... 34
New Mexico..... 35
New York..... 36
North Carolina..... 37
North Dakota..... 38
Ohio..... 39
Oklahoma..... 40
Oregon..... 41
Pennsylvania..... 42
Puerto Rico..... 43
Rhode Island..... 44
South Carolina..... 45
South Dakota..... 46
Tennessee..... 47
Texas..... 48
Utah..... 49
Vermont..... 50
Virginia..... 51
Virgin Islands..... 52
Washington..... 53
West Virginia..... 54
Wisconsin..... 55
Wyoming..... 56
U.S. Air Force..... 57
U.S. Army..... 58
U.S. Navy..... 59

(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

1 : 3,826,415
3,826,621
3,826,632
4 : 3,826,234
3,826,386
3,826,460
3,826,977
5 : 3,826,062
3,826,138
6 : Re.28,090
3,825,963
3,825,964
3,825,968
3,825,979
3,825,980
3,826,001
3,826,012
3,826,020
3,826,024
3,826,027
3,826,034
3,826,041
3,826,051
3,826,059
3,826,127
3,826,134
3,826,140
3,826,145
3,826,150
3,826,156
3,826,167
3,826,168
3,826,171
3,826,176
3,826,185
3,826,213
3,826,220
3,826,237
3,826,243
3,826,245
3,826,254
3,826,255
3,826,258
3,826,263
3,826,266
3,826,273
3,826,293
3,826,317
3,826,324
3,826,331
3,826,339
3,826,340
3,826,343
3,826,349
3,826,364
3,826,371
3,826,406
3,826,421
3,826,427
3,826,446
3,826,452
3,826,454
3,826,467
3,826,468
3,826,469
3,826,475
3,826,480
3,826,491
3,826,500
3,826,503
3,826,513
3,826,514
3,826,521
3,826,522
3,826,527
3,826,534
3,826,538
3,826,561
3,826,563
3,826,572
3,826,577
3,826,585
3,826,623
3,826,633
3,826,644
3,826,653
3,826,708
3,826,730
3,826,736
3,826,753
3,826,754
3,826,757
3,826,775
3,826,803
3,826,804
3,826,807
3,826,817
3,826,823
3,826,830
3,826,846
3,826,851
3,826,852
3,826,853
3,826,856
3,826,865
3,826,866
3,826,869
3,826,888
3,826,901
3,826,917
3,826,922
3,826,927
3,826,931
3,826,948
3,826,967
3,826,972
3,826,981
3,826,987
3,826,999
3,827,022
3,827,036
3,827,039
3,827,045
3,827,046
3,827,050
3,827,072
3,827,075
3,827,078
8 : 3,825,961
9 : Re.28,089
3,825,957
3,825,983
3,826,011
3,826,118
3,826,139
3,826,291
3,826,344
3,826,355
3,826,511
3,826,545
3,826,578
3,826,614
3,826,618
3,826,627
3,826,629
3,826,673
3,826,694
3,826,740
3,826,751
3,826,756
3,826,787
3,826,885
3,826,942
10 : 3,826,097
3,826,329
11 : 3,826,705
3,827,069
12 : 3,825,959
3,826,055
3,826,084
3,826,214
3,826,215
3,826,217
3,826,232
3,826,262
3,826,398
3,826,423
3,826,424
3,826,459
3,826,488
3,826,684
3,826,734
3,826,842
3,826,908
3,826,964
3,826,973
3,826,986
3,827,023
3,827,029
3,827,044
13 : Re.28,085
3,825,987
3,826,450
3,827,011
3,827,079
16 : 3,826,819
3,826,921
17 : Re.28,091
3,825,952
3,825,955
3,825,991
3,826,014
3,826,017
3,826,039
3,826,042
3,826,045
3,826,046
3,826,092
3,826,149
3,826,154
3,826,182
3,826,203
3,826,230
3,826,242
3,826,259
3,826,267
3,826,283
3,826,325
3,826,337
3,826,350
3,826,388
3,826,393
3,826,400
3,826,401
3,826,402
3,826,458
3,826,498
3,826,506
3,826,508
3,826,510
3,826,520
3,826,543
3,826,619
3,826,622
3,826,670
3,826,686
3,826,719
3,826,771
3,826,794
3,826,798
3,826,821
3,826,857
3,826,863
3,826,879
3,826,883
3,826,884
3,826,914
3,826,941
3,826,955
3,826,985
3,827,024
3,827,041
3,827,057
3,827,076
18 : Re.28,087
3,825,994
3,826,047
3,826,104
3,826,209
3,826,358
3,826,382
3,826,395
3,826,409
3,826,425
3,826,439
3,826,497
3,826,516
3,826,532
3,826,703
3,826,891
3,826,929
3,826,934
3,826,989
3,827,018
19 : 3,826,049
3,826,070
3,826,090
3,826,295
3,826,327
3,826,515
3,826,517
3,826,607
3,826,890
3,827,030
20 : 3,826,315
3,826,336
3,826,431
21 : 3,826,016
3,826,019
3,826,052
3,826,102
3,826,436
3,826,499
3,826,553
3,826,898
22 : 3,826,341
3,826,420
23 : 3,826,638
24 : 3,826,101
3,826,210
3,826,244
3,826,251
3,826,281
3,826,296
3,826,384
3,826,451
3,826,483
3,826,492
3,826,494
3,826,544
3,826,575
3,826,580
3,826,651
3,826,662
3,826,667
3,826,690

3,826,758
3,826,786
3,826,875
3,826,897
3,826,926
3,826,975
3,827,001
3,827,019
3,827,037

25 : 3,825,953
3,826,013
3,826,032
3,826,040
3,826,056
3,826,060
3,826,093
3,826,114
3,826,119
3,826,282
3,826,313
3,826,321
3,826,373
3,826,381
3,826,463
3,826,489
3,826,531
3,826,565
3,826,579
3,826,582
3,826,592
3,826,598
3,826,606
3,826,625
3,826,687
3,826,801
3,826,872
3,826,873
3,826,911
3,826,920
3,826,994
3,826,997
3,827,008
3,827,021
3,827,032
3,827,038
3,827,054
3,827,056
3,827,059

26 : 3,825,960
3,825,988
3,826,000
3,826,006
3,826,010
3,826,033
3,826,050
3,826,054
3,826,117
3,826,151
3,826,157
3,826,216
3,826,260
3,826,261
3,826,269
3,826,271
3,826,287
3,826,302
3,826,303
3,826,304
3,826,319
3,826,332
3,826,372
3,826,410
3,826,422
3,826,433
3,826,453
3,826,466
3,826,484
3,826,490
3,826,533
3,826,540
3,826,550
3,826,552
3,826,562
3,826,599
3,826,782
3,826.820

3,826,844
3,826,958
27 : Re.28,088
3,825,956
3,825,962
3,825,970
3,826,113
3,826,257
3,826,270
3,826,300
3,826,375
3,826,408
3,826,474
3,826,912
3,826,935
3,827,015
3,827,077
28 : 3,825,958
3,826,170
29 : 3,826,083
3,826,122
3,826,159
3,826,188
3,826,208
3,826,389
3,826,432
3,826,605
3,826,641
3,826,834
31 : 3,826,135
32 : 3,826,909
33 : 3,826,280
34 : 3,825,990
3,826,022
3,826,026
3,826,063
3,826,066
3,826,141
3,826,142
3,826,174
3,826,191
3,826,223
3,826,264
3,826,278
3,826,285
3,826,365
3,826,368
3,826,370
3,826,394
3,826,493
3,826,495
3,826,611
3,826,634
3,826,640
3,826,643
3,826,650
3,826,671
3,826,682
3,826,701
3,826,725
3,826,742
3,826,745
3,826,746
3,826,748
3,826,759
3,826,761
3,826,762
3,826,777
3,826,781
3,826,790
3,826,791
3,826,797
3,826,829
3,826,832
3,826,835
3,826,840
3,826,877
3,826,978
3,827,047
3,827,055
3,827,063
35 : 3,826,057
36 : Re.28,093
Re.28,095
3,825,965
3,825,976
3,825,992

3,825,995
3,825,996
3,826,004
3,826,005
3,826,029
3,826,085
3,826,106
3,826,116
3,826,136
3,826,152
3,826,194
3,826,211
3,826,229
3,826,231
3,826,239
3,826,241
3,826,247
3,826,252
3,826,265
3,826,322
3,826,323
3,826,345
3,826,357
3,826,359
3,826,360
3,826,376
3,826,378
3,826,396
3,826,411
3,826,441
3,826,455
3,826,496
3,826,518
3,826,519
3,826,523
3,826,536
3,826,537
3,826,549
3,826,551
3,826,559
3,826,560
3,826,566
3,826,568
3,826,603
3,826,615
3,826,626
3,826,645
3,826,652
3,826,654
3,826,655
3,826,656
3,826,657
3,826,660
3,826,661
3,826,663
3,826,679
3,826,685
3,826,696
3,826,698
3,826,721
3,826,731
3,826,732
3,826,733
3,826,738
3,826,773
3,826,780
3,826,813
3,826,815
3,826,827
3,826,855
3,826,867
3,826,868
3,826,876
3,826,892
3,826,896
3,826,899
3,826,932
3,826,944
3,826,947
3,826,950
3,826,957
3,826,969
3,826,983
3,827,003
3,827,007
3,827,026
3,827,053
3,827.062

3,827,070
37 : 3,826,110
3,826,165
3,826,288
3,826,333
3,826,391
3,826,558
3,826,982
39 : 3,825,966
3,825,972
3,825,981
3,825,984
3,826,003
3,826,074
3,826,082
3,826,088
3,826,096
3,826,109
3,826,120
3,826,123
3,826,178
3,826,179
3,826,189
3,826,190
3,826,205
3,826,222
3,826,224
3,826,249
3,826,274
3,826,297
3,826,330
3,826,334
3,826,347
3,826,363
3,826,367
3,826,404
3,826,418
3,826,429
3,826,470
3,826,502
3,826,528
3,826,546
3,826,547
3,826,554
3,826,570
3,826,576
3,826,586
3,826,635
3,826,669
3,826,675
3,826,710
3,826,720
3,826,726
3,826,728
3,826,729
3,826,778
3,826,812
3,826,893
3,826,900
3,826,902
3,826,903
3,826,913
3,826,946
3,826,963
3,826,988
3,827,013
3,827,014
3,827,025
40 : Re.28,094
3,826,053
3,826,077
3,826,078
3,826,079
3,826,472
3,826,525
3,826,724
3,826,776
3,826,887
3,826,936
3,827,040
41 : 3,826,025
3,826,124
3,826,275
3,826,437
3,826,482
3,826,591

3,826,770
3,826,795
3,827,068
42 : 3,825,973
3,825,993
3,826,021
3,826,048
3,826,080
3,826,091
3,826,094
3,826,095
3,826,105
3,826,107
3,826,108
3,826,129
3,826,132
3,826,153
3,826,196
3,826,198
3,826,199
3,826,200
3,826,201
3,826,202
3,826,246
3,826,305
3,826,311
3,826,326
3,826,328
3,826,379
3,826,387
3,826,412
3,826,414
3,826,434
3,826,438
3,826,443
3,826,473
3,826,529
3,826,539
3,826,564
3,826,587
3,826,594
3,826,602
3,826,620
3,826,631
3,826,647
3,826,668
3,826,691
3,826,693
3,826,702
3,826,709
3,826,763
3,826,765
3,826,766
3,826,767
3,826,796
3,826,826
3,826,839
3,826,843
3,826,860
3,826,864
3,826,880
3,826,906
3,826,919
3,826,923
3,826,928
3,826,930
3,826,938
3,826,951
3,826,976
3,826,991
3,827,005
3,827,010
44 : 3,825,978
3,826,583
3,826,993
45 : 3,826,276
3,826,445
46 : 3,826,613
47 : 3,826,163
3,826,186
3,826,308
3,826,711
3,826,717
48 : 3,825,999
3,826,002

3,826,028
3,826,064
3,826,068
3,826,099
3,826,115
3,826,144
3,826,160
3,826,164
3,826,183
3,826,307
3,826,309
3,826,310
3,826,312
3,826,316
3,826,335
3,826,390
3,826,462
3,826,512
3,826,581
3,826,612
3,826,624
3,826,700
3,826,750
3,826,825
3,826,871
3,826,904
3,826,965
3,826,971
3,827,027
3,827,031
3,827,073
49 : 3,826,087
3,826,206
3,826,471
3,826,574
3,826,723
3,826,808
3,826,816
51 : Re.28,084
Re.28,086
3,826,067
3,826,172
3,826,177
3,826,184
3,826,226
3,826,250
3,826,405
3,826,448
3,826,688
3,826,707
3,826,850
3,826,874
3,826,881
3,826,959
3,827,002
53 : 3,825,969
3,826,128
3,826,207
3,826,407
3,826,449
3,826,617
3,826,678
3,826,818
3,826,848
3,826,910
3,826,954
54 : 3,826,805
3,826,806
55 : 3,826,103
3,826,253
3,826,256
3,826,284
3,826,354
3,826,361
3,826,362
3,826,530
3,826,589
3,826,604
3,826,674
3,826,743
3,826,769
3,826,854
3,826,870
3,826,894
3,826,940

DESIGN PATENTS

5 : 232,234
6 : 232,207
232,209
232,217
232,220
232,229
232,246
232,250
232,257
232,267

8 : 232,214
232,216
17 : 232,243
232,253
232,259
232,270
232,271
18 : 232,222
232,223

232,268
19 : 232,242
22 : 232,236
232,237
232,238
24 : 232,247
25 : 232,251
232,262
26 : 232,202
31 : 232,203
33 : 232,245

34 : 232,206
232,212
232,213
232,224
232,231
232,244
232,265
232,266
232,273
35 : 232,239

36 : 232,201
232,208
232,228
232,233
232,248
232,260
232,263
38 : 232,240
232,241
232,249

39 : 232,219
41 : 232,272
42 : 232,230
45 : 232,225
48 : 232,232
232,252
232,269
51 : 232,211
232,258

U. S. GOVERNMENT PRINTING OFFICE : O - 1974

U.S. DEPARTMENT OF COMMERCE
Frederick B. Dent, *Secretary*

PATENT OFFICE
C. Marshall Dann, Commissioner